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# The Ohio Brass Company

Mansfield, Ohio, V.S.A.

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OHIO STATE UNIVERSITY.

SENTED BY

Prof. W. J. Magruder.



# The Ohio Brass Co.

# Designers, Dealers and Manufacturers

of a Complete and Perfected Line of Appliances used in the Construction and Operation

**OF** 

# Electric Railway, Lighting and Power and Mining Plants

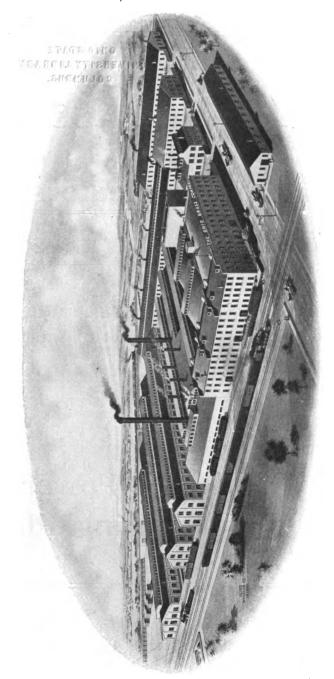
Main Office and Works:

MANSFIELD, OHIO, U. S. A.

Cable Address, "Electric, Mansfield."
1903.



TK 455 031 1403



PLANT OF THE OHIO BRASS COMPANY, MANSFIELD, OHIO, U. S. A.

## Introductory.

In presenting this, the Sixth Edition of our Catalogue of Electric Railway Materials and Supplies, we trust that it will meet with the same general approval as has been accorded to the preceding publications of this kind which we have issued from time to time.

In compiling this Catalogue, we have endeavored to confine the materials listed to those which, by extensive use, are generally recognized as standard types, forms and sizes. We have accordingly eliminated such articles as, in the progression of the arts, have become too obsolete for further employment; and, on the other hand, have added a number of new devices and modified forms of what have hitherto been regarded as standard types of goods.

Our manufacturing facilities, which have been in the past often taxed to their utmost, have recently been largely increased by the addition of several new buildings, fully equipped with the most modern machinery. These increased facilities will enable us to handle large contracts with greater dispatch than formerly; and to maintain the lowest possible prices for our products consistent with the high standard of materials we supply.

In communicating with us by wire, the Code Words shown throughout the Catalogue in connection with the various articles listed, may often be used to advantage. We are subscribers to the "A. B. C., Fifth Edition," the "Atlantic Cable" and "Lieber's Standard" Codes, and in addition have a private Code of our own compiling, a copy of which will be furnished upon request.

We trust that you will find this Catalogue fully commensurate with your present and future needs.

Yours very truly,

#### THE OHIO BRASS COMPANY.

Mansfield, Ohio, June 1, 1903.

Cable Address "Electric, Mansfield."

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#### Remarks to Customers.

Liability. We exercise the utmost care in packing goods and cannot be held responsible for any damage to them while in transit. At the same time, if such cases are reported to us, we will gladly co-operate with our customers in having all claims adjusted.

2nd— It will enable us to ship orders more promptly and with less liability of error if the catalogue number and the name in full of each article is stated; also whether shipments should be made by express or freight, and if a particular line is preferred, specifying the same.

Telegraphing.

The code words distributed throughout this Catalogue, designating the various articles listed, do not conflict with the "A. B. C. Code, Fifth Edition," the "Atlantic Cable," "Lieber's Standard" or our own private Telegraphic Code, and may be used in connection with any of them, where such use may seem advisable.

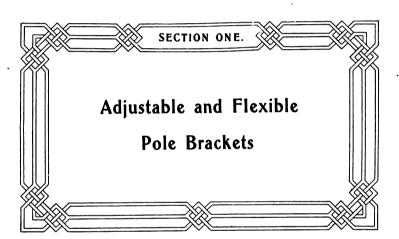
4th— Goods should not be returned without first communicating with us to obtain our approval and the correct shipping directions; at the time such shipment is made, proper notification of it should be forwarded to us, with a memorandum of all the material sent.

5th— All prices are subject to change without notice. Where prices. quotations have been made by letter or through salesmen, reference to same should be made in the order.

6th— Accounts are payable thirty days from date of invoice, unless rerms. subject to special terms; those overdue are liable to sight draft.

7th— Remit by draft, money order, registered letter or express money order.

**Financial Standing.**If you are not positive that your financial standing is known and acceptable to us, please accompany your first order with good references, or authority to draw with bill of lading, or to express C. O. D. If ordering the latter way, sufficient funds should be sent to cover the transportation charges both ways.



#### Adjustable and Flexible Pole Brackets.

THE Pole Brackets illustrated on the following pages embrace a variety of standard types, all of which are thoroughly practical, having long since passed through the necessary experimental stages to make their development perfect and complete. In making a selection of one or more of these designs,

#### Designs of Brackets.

therefore, it is altogether a question of the conditions they are to be placed under in use, as to which will give the best all around results. The rigid form of bracket is represented by two types, viz., the "Wood's" and "Standard," and the flexible form by the "Wood's,"

"Richmond" and "Detroit" types. In each instance a variety is presented, the differences consisting partly in their details of construction and somewhat also in their general form.

These Brackets are equipped with upper pole socket and hook castings of a

The Wood's Adiustable for Wood Poles. peculiar design, as may be seen by the details of the cut on page 8; these, in conjunction with the brace arm, admit of a vertical adjustment of the horizontal arm, and give the additional feature also of allowing the bracket to be easily swung into position on the pole; the pole castings having been previously put up.

The endeavor has been to combine in the "Standard" Brackets, illustrated on

The Standard Adiustable.

pages 13 and 14, simplicity of construction and lightness of weight, with moderate cost; accordingly the castings and other fittings are minimized in number, and the design is simplified as much as possible.

In this particular form the salient feature is the Flexible Bracket End. a detailed

The Wood's Flexible.

description of which appears on page 15. The Styles A and D Brackets for Wood Poles resemble the corresponding types of the Wood's Adjustable in the employment of identically the same patterns for the pole castings, as mentioned above.

These two types resemble each other very closely in their general appearance

The Richmond and Detroit.

and form, the defining differences between them being in the strength and massiveness of their details, those of the Detroit being much the heavier. This applies not only to the castings, but also to the supporting rod, which is 17 and 1/2 inch, and the suspension strand, which is 1/4

and is inch, respectively, in the Richmond and Detroit types.

#### Adjustable and Flexible Pole Brackets,

Continued.

Where "Pipe" is included in the price list of any style of bracket, it is to be understood as the standard weight of Wrought Iron Gas and Water Pipe of the sizes as given, which are in every instance "pipe measurements," i. e., the nominal inside diameter; tables referring to which may be found in the latter part of this Catalogue.

The tubing as listed, whether as "A" or "C," refers to "Structural Steel

# Pipe and Tubing.

Tubing," which has proved by extensive use to be highly satisfactory for this service. The radical differences between the Styles A and C are that the former is lighter in weight and cannot be threaded; the C tubing, on the contrary, is of the same relative weight as the pipe mentioned above, and

may be threaded. The A tubing in comparative tests and actual use proves itself stronger, size for size, than pipe, and naturally the C tubing appears to relatively better advantage. The *outside* diameter of both styles of tubing and pipe in the corresponding sizes are the same. Full data regarding this tubing is given in the tables at the back of this Catalogue.

In the construction of these brackets, Malleable Iron castings are used exclusively;

# Bracket Fittings.

the designs adopted in each case being such as to combine maximum strength with lightness in weight and neat and symmetrical appearance. In the several styles of brackets illustrated on the following pages, various means of connection are employed between the bracket arms and castings,

and these are indicated in the diagrams on the opposite page.

No attempt has been made in the designs of brackets with ornamentation to show

## Ornamental Forms.

a complete or exceptionally varied lot of these, but rather to illustrate a neat, practical and inexpensive form in the several instances, and by so doing indicate our ability to supply whatever may be required in this line.

Exceptional facilities, combined with an extensive experience, enable us to

Special Styles.

prepare designs and specifications of, and in turn supply satisfactorily, brackets other than those included in this Catalogue, and which may be "special" in nature from any cause whatsoever.

Provision is made on all Flexible Brackets for Iron Poles for additional and

Secondary Insulation.

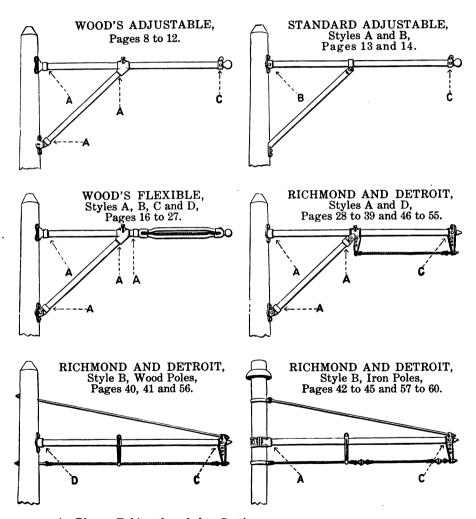
auxiliary insulation to that of the usual trolley wire hanger. In the "Wood's" type this consists of special sized spools, and in the other forms, of Premier Strain Insulators, all being made of Dirigo Insulation and attached to the suspension strand on either side of the hanger.



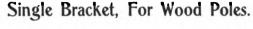
#### Adjustable and Flexible Pole Brackets,

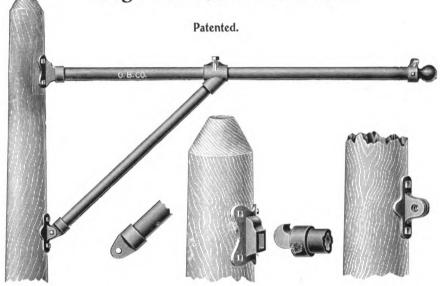
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#### Diagram of Connections.



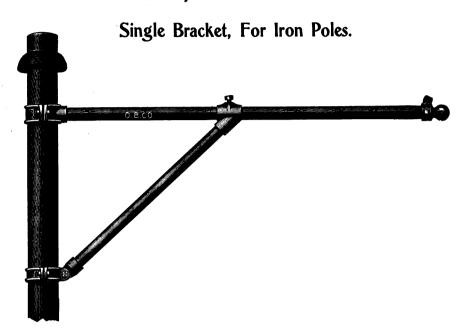
- A-Pipe or Tubing threaded to Casting.
- B-Tubing bolted to Casting.
- C-Pipe or Tubing attached to Casting by Set Screw.
- D-Pipe or Tubing slipped into Casting, but not threaded or bolted.





CODE WORD.	NO.									
Abdebam.	1005 - 6	Foot	Arm,	11/4	inch	ı pipe	Each,	\$ 3	3	60
Gemebam.	3218-"	"	"	"	"	C tubing	"	:	3	30
Abdicabam.	1006-7		"	"	"	pipe		:	3	90
Geminabam.	3219-"	"	"	"	"	C tubing		;	3	60
Abdictam.	1007—8	"	"	"	"	pipe			4	40
Gemmam.	3220-"	"	"	"	"	C tubing		;	3	90
Abducam.	1008-6	"	"	1½	"	pipe		:	3	90
Gemmariam.	3221-"	"	"	"	"	C tubing		:	3	60
Abducebam.	1009-7	"	"	"	"	pipe			4	30
Gemmaseam.	3222-"	"	"	"	"	C tubing	"	;	3	90
Aberrabam.	1010-8	"	4.6	"	"	pipe			4	70
Gemmatam.	3223	"	4.4	"	"	C tubing	. "		4	20
Gemmiferam.	32246	66 .	"	2	"	pipe			4	90
Gemueram.	3225-"	"	" "	"	"	C tubing			4	50
Gemulam.	3226 - 7	"	4.6	"	"	pipe			5	50
Generascam.	3227-"	"	"	"	"	C tubing			4	90
Genistam.	3228 - 8	"	"	"	"	pipe			6	00
Genuinam.	3229	"	"	"	"	C tubing			5	30

The Bracket lengths as listed are the distances from the pole to the outer end of the horizontal arm, but not including the projecting end casting.

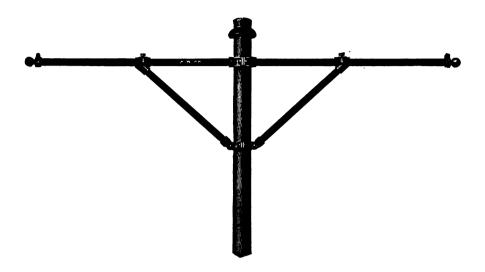


CODE WORD.	NO.							
Concacatam.	2150-6 1	Foot	Arm,	11/4	inch	n pipe	Each,	\$ 4 80
Gerendam.	3230"	"	"	"	"	C tubing	66	4 60
Concalebam.	2151-7	"	"	"	"	pipe	"	5 10
Germinatam.	3231—"	"	"	"	"	C tubing		4 80
Concatenam.	2152-8	"	"	"	"	pipe		5 60
Geryoneam.	3232	66	"	"	"	C tubing	"	5 10
Concedam.	2153-6	"	"	11/2	"	pipe		5 10
Gerundivam.	3233—''	"	"	"	"	C tubing	. "	4 80
Concededam.	2154 - 7	"	"	"	"	pipe	. "	5 50
Gestabam.	3234—''	"	"	"	"	C tubing	. "	5 10
Concelabam.	2155-8	"	"	"	"	pipe	. "	6 00
Gestaturam.	3235—''	"	"	"	"	C tubing	66	5 50
Gestaveram.	3236-6		"	2	"	pipe	"	6 30
Gestitabam.	3237—''	"	"	"	"	C tubing		5 90
Gibberam.	3238 - 7	"	"	"	"	pipe	. "	6 80
Gignebam.	3239"	"	"	"	"	C tubing	. "	6 30
Glabrabam.	3240-8	46	"	"	"	pipe	. "	7 40
Glabrescam.	3241—''	"	"	"	"	C tubing	. "	6 80

The Bracket lengths as listed are the distances from the pole to the outer end of the horizontal arm, but not including the projecting end casting.



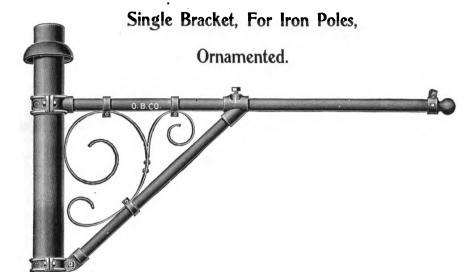
Double Bracket, For Iron Poles.



CODE WORD.	NO.							
Conceperam.	2156—6 I	Poot	Arm,	, 1¼	inch	n pipe	Each,	\$ 8 00
Glaciabam.	3242-"	66	"	"	"	C tubing	"	7 50
Concernam.	2157 - 7	"	"	"	"	pipe		8 70
Gleucinam.	3243''	"	"	"	"	C tubing		8 00
Conchatam.	2158 - 8	"	"	"	"	pipe		9 50
Globabam.	3244-"	66	"	"	"	C tubing		8 60
Concinam.	2159 - 6	"	"	1½	"	pipe		8 60
Globaturam.	3245-"	"	66	"	"	C tubing		8 10
Concinebam.	2160-7	"	"	"	"	pipe		9 40
Globaveram.	3246"	"	"	"	"	C tubing	"	8 70
Concipilam.	2161-8	"	"	"	"	pipe	44	10 30
Glocidabam.	3247-"	"	"	"	"	C tubing		9 40
Glocituram.	32486	"	"	2	"	pipe		10 80
Glomerabam.	3249-"	"	"	"	"	C tubing		9 90
Glorificam.	3250 - 7	44	"	"	"	pipe		11 80
Glubebam.	3251-"	"	"	"	"	C tubing		10 70
Glutiam.	32528	"	"	"	"	pipe	"	13 00
Glutie bam.	3253—"	"	"	"	"	C tubing	"	11 60

The Bracket lengths as listed are the distances from the pole to the outer end of the horizontal arm, but not including the projecting end casting.





CODE WORD.	NO.								
Glutinosam.	3254-6 1	Foot	Arm,	11/4	inch	ı pipe	Each,	\$ 7	30
Glutiveram.	3255—''	"	"	"	"	C tubing	"		60
Gluttitam.	3256 - 7	"	"	. 66,	"	pipe	"	8	00
Gorgoniam.	3257—"	"	"	"	"	C tubing	44	7	20
Graditam.	<b>3258</b> —8	44	"	"	"	pipe	"	8	80
Gramiosam.	3259	"	"	44	. "	C tubing	"	7	80
Granatam.	3260-6	"	"	11/2	"	pipe	66	7	60
Gratificam.	3261-"	"	"	"	"	C tubing	"	6	80
Gravaturam.	3262 - 7	"	"	"	"	pipe	"	8	40
Gravaveram.	3263	"	"	"	"	C tubing	"	7	40
Gravidabam.	3264 - 8	"	"	"	"	pipe	4.6	9	30
Gregabam.	3265—''	"	"	"	"	C tubing	"	8	10
Gregaturam.	3266 - 6	"	. "	2	"	pipe	"	9	20
Gregaveram.	3267-"	"	"	"	"	C tubing	"	8	00
Gromatam.	32687	"	"	44	"	pipe	"	10	20
Gruebam.	3269	"	"	"	"	C tubing	"	8	70
Grumaticam.	3270-8	"	"	4.4	"	pipe	"	11	20
Grunniam.	3271—"	66	"	"	"	C tubing	"	9	60

The Bracket lengths as listed are the distances from the pole to the outer end of the horizontal arm, but not including the projecting end casting.



#### Double Bracket, For Iron Poles,

#### Ornamented.



CODE WORD.	NO.								
Grunnie bam.	3272 - 6	Foot	Arm,	11/4	inch	pipe	Each,	\$13	30
Gryllabam.	3273-"	"	"	44		C tubing		11	
Gubernabam.	3274 - 7	"	"	"	4.6	pipe		14	70
Gummosam.	3275-"	"	"	"	"	C tubing		13	10
Gustandam.	3276-8	"	"	"	"	pipe		16	30
Gustatam.	3277-"	46	44	4.6	"	C tubing		14	40
Guttaturam.	3278 - 6	"	"	11/2	"	pipe		14	00
Gypsabam.	3279"	"	"	"	"	C tubing		12	30
Gypsaturam.	3280-7	"	"	"	"	pipe		15	60
Gyrabam.	3281-"	66	66	"	66	C tubing	"	13	50
Gyraturam.	3282-8	44	"	"		pipe		17	40
Gyraveram.	3283-"	"	"	"		C tubing		14	90
Habebam.	3284 - 6	"	4.6	2	"	pipe		16	90
Habitabam.	3285	"	"	66	"	C tubing		14	50
Habituatam.	3286 - 7	"	66	"	"	pipe		18	80
Hadriacam.	3287"	"	"	"	"	C tubing		16	00
Haematinam.	<b>3288</b> —8	"	"	"	"	pipe		20	90
Halabam.	3289"	"	"	"	66	C tubing		17	60

The Bracket lengths as listed are the distances from the pole to the outer end of the horizontal arm, but not including the projecting end casting.

#### Standard Adjustable Pole Bracket.

#### Single Bracket, For Wood Poles,

#### Style A.



CODE WORD.	NO.									
Halaturam.	3290—6	Foot	Arm,	1¼	inch	A	tubing	• • • • • • • • • • • • • • • • • • • •	.Each,	\$ 2 80
Halaveram.	3291—7	"	"	"	"	"	"	••••	. "	3 00
Halitandam.	3292—8	"	"	"	"	"	"		"	3 30
Halitatam.	3293—6	"	"	1½	"	"	"		"	2 90
Hamaxabam.	32947	"	"	"	"	"	"		"	3 20
Harmoniam.	3295—8	"	"	"	"	"	"		, "	3 60
Harpagabam.	32966	"	"	2	"	"	"			3 80
Haruspicam.	3297—7	"	"	"	"	"	"			4 20
Hauriebam.	3298—8	"	"	"	"	"	"		. "	4 60

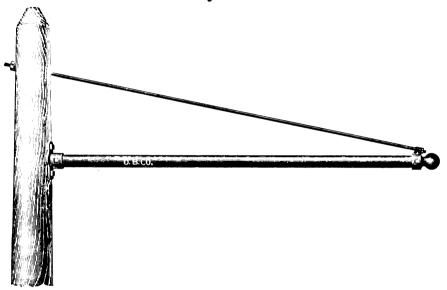
The Bracket lengths as listed are the distances from the pole to the outer end of the horizontal arm, but not including the projecting end casting.



## Standard Adjustable Pole Bracket.

#### Single Bracket, For Wood Poles,

Style B.



CODE WORD.	NO.								
Helveolam.	3308—6	Foot	Arm,	1¼	inch	A	tubing	 Each,	\$ 2 00
Helvinam.	33097	"	"	"	"	"	"	 "	2 20
Hepaticam.	3310-8	"	"	"	"	"	"	 "	2 40
Heracliam.	3311—6	"	"	1½	"	"	"	 "	2 20
Herbiferam.	3312-7	4.6	4.6	"	"	"	"	 "	2 40
Herculanam.	3313—8	"	"	"	"	"	"	 . "	2 60
Hibernabam.	3314—6	"	"	2	"	"	"	 "	2 90
Hilarabam.	3315—7	"	"	"	"	"	"	 	3 10
Hinnituram.	3316-8	"	"	"	"	"	"	 "	3 40

The Bracket lengths as listed are the distances from the pole to the outer end of the horizontal arm, but not including the projecting end casting.



#### Flexible Bracket End.

Patented.



No. 1020.

RIGID PIPE BRACKETS now in use may be changed to the flexible type with a small outlay by means of the Flexible Bracket Ends. The curved suspension arms are made of ¾ inch Style C Structural Tubing which is of the same weight but stronger than the corresponding size of wrought iron gas and water pipe heretofore regularly used in their construction. The outer casting is provided with an eye on its upper side for attaching an overhead strand or rod support if any is required. The Bracket Ends are furnished, when so specified, with Dirigo Insulators at either end of the suspension wire to provide secondary insulation for the Trolley Wire Hanger.

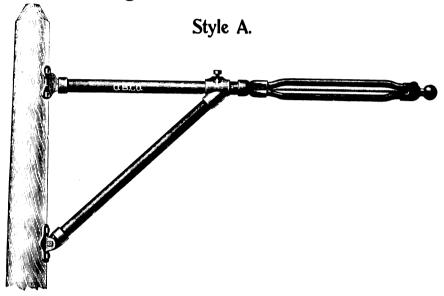
The Bracket Ends, which are alike in all forms of the Flexible Brackets, overcome the hammering effect of the trolley wheel on the hanger, due to the rigid construction as used on the ordinary form of Pole Bracket, and make a yielding and flexible support for it, allowing the cars to be operated at a high rate of speed without the evil results heretofore experienced. The hanger is suspended on steel strand cable between the curved arms, which extend on either side of it in substantially the same plane, so that it is impossible for the trolley wheel, should it accidentally leave the trolley wire, to strike it or become entangled in the suspension cable. This cable is \( \frac{1}{2} \) of an inch in diameter and is made up of nineteen wires of No. 16 B. & S. gauge in stranded form, which provides for the hanger an exceptionally flexible and strong support. The hanger, being suspended in the middle of the cable, is at the "center of elasticity," and therefore obtains the maximum effect of its flexibility. It also sets in a perfectly upright position, as the cable is of the same length and tautness on either side of it.

In ordering Bracket Ends state inside diameter of the pipe and the number of threads to the inch on same, to which the Flexible Ends are to be attached.



Patented.

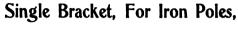
#### Single Bracket, For Wood Poles.

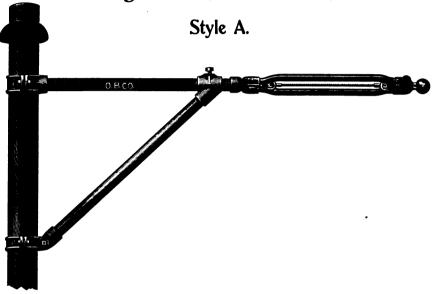


CODE WORD.	No.								
Abgregabam.	1011—6	Foot	Arm,	11/4	inch	pipe	Each,	<b>\$</b> 4	60
Hirsutam.	3317—"	"	"	"	"	C tubing	. "	4	40
Abhortam.	1012-7	"	"	"	"	pipe		4	90
Hirtam.	3318"	"	"	"	"	C tubing	"	4	60
Abituram.	10138	"	"	"	"	pipe		5	10
${\it Hispidabam}.$	3319"	"	"	"	"	C tubing	"	4	90
Abjeceram.	1014—6	"	"	1½	"	pipe	"	4	90
Historicam.	3320—''	"	"	"	"	C tubing	"	4	60
Abjugandam.	10157	"	"	"	"	pipe	"	5	30
Homericam.	3321-"	"	"	"	"	C tubing	"	5	00
Abjutatam.	10168	"	"	"	"	pipe	"	5	70
Homicidam.	3322"	"	"	"	"	C tubing	"	5	30

The Bracket lengths as listed are the distances from the pole to the center of the suspension cable in the Bracket End.

Patented.





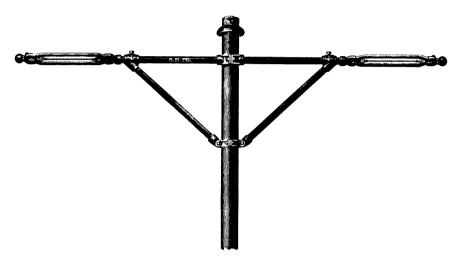
CODE WORD.  Baburram.	NO. 2000—6	Foot	Arm,	11/4	inch	pipe	Each,	<b>\$</b> 6	30
Honestabam.	3323"	"	"	"		C tubing			20
Baccatam.	2001-7	"	"	ii	. "	pipe	66	6	70
Honorabam.	3324"	"	"	"	"	C tubing	"	6	40
Baccinam.	2002-8	"	"	"	"	pipe	"	6	90
Honustam.	3325"	"	"	. 66	"	C tubing	"	6	70
Bajulabam.	2003-6	"	"	1½	"	pipe	"	6	70
Hordam.	3326—"	"	"	"	"	C tubing	"	6	50
Balandam.	2004—7	"	"	"	"	pipe	"	7	10
Horituram.	3327—''	"	"	"	"	C tubing	"	6	80
Balantiam.	2005-8	"	"	"	"	pipe	"	7	50
Hortaturam.	3328"	"	"	"	"	C tubing	"	7	10

The Bracket lengths as listed are the distances from the pole to the center of the suspension cable in the Bracket End.



Patented.

# Double Bracket, For Iron Poles, Style A.

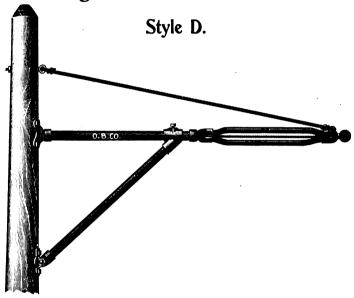


CODE WORD.	NO.									
Ballaturam.	2009—6	Foot	Arm,	1¼	inch	pipe	Each,	\$ 1	1	10
Hosticam.	3329—''	"	"	"	"	C tubing	"	1	0	70
Ballaveram.	2010-7	"	"	"	"	pipe		1	1	70
Hostiferam.	3330-"	"	44	"	"	C tubing		1	1	<b>2</b> 0
Ballistam.	2011-8	"	"	"	"	pipe	"	1	2	<b>50</b>
Hostituram.	3331—''	"	"	"	"	C tubing	"	1	.1	80
Balsaminam.	20126	"	"	1½	"	pipe	• 6	1	.1	70
Humandam.	3332"	"	"	"	"	C tubing	"	1	.1	20
Bantinam.	2013—7	"	"	"	"	pipe	"	1	2	50
Humatam.	3333—''	"	"	"	"	C tubing	"	1	.1	80
Barbam.	2014—8	"	"	"	"	pipe	"	1	.3	40
Humebam.	3334—"	"	"	"	"	C tubing	"	1	2	50

The Bracket lengths as listed are the distances from the pole to the center of the suspension cable in the Bracket End.

#### Patented.



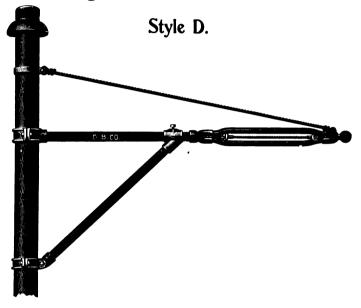


CODE WORD.	NO.									
Humorosam.	3335 - 6	Foot	Arm,	11/4	inch	pipe	Each,	<b>\$</b> 5	0	)()
Hybridam.	3336"	"	"	"	"	C tubing	"	4	1 8	30
Hydaspeam.	3337—7	"	"	"	"	pipe	. "	E	5 3	30
Hydrinam.	3338-"	"	"	"	"	C tubing	"	E	5 1	l0
Hymnituram.	33398	"	"	"	"	pipe	. "	Ę	5 5	50
Hypocritam.	3340"	"	"	"	"	C tubing	. "	7	7 3	30
Hyrcaniam.	33416	"	"	1½	"	pipe	. "	Ę	5 3	30
Iambicam.	3342-"	"	"	"	"	C tubing	. "	ŧ	5 1	10
Ibericam	3343-7	"	"	"	"	pipe		Ę	5 7	70
Icturam.	3344—"	"	"	"	"	C tubing	. "	ŧ	5 8	30
Idiotam.	3345—8	"	"	"	"	pipe	. "	(	6 1	10
Iduabam.	3346—"	"	"	"	"	C tubing	. "	ŧ	5 7	70

The Bracket lengths as listed are the distances from the pole to the center of the suspension cable in the Bracket End.

#### Patented.

#### Single Bracket, For Iron Poles,



CODE WORD.	NO.							
Iduaturam.	<b>3347—6</b> 1	Foot	Arm,	, 1¼	inch	pipe	Each,	<b>\$</b> 6 90
Ignavam.	3348—"	"	46	"	"	C tubing	"	6 70
Ignaves cam.	3349 - 7	"	"	66	"	pipe	"	7 20
Ignavie bam.	3350"	"	"	"	44	C tubing	"	7 00
Igneam.	3351-8	"	"	"	44	pipe	"	7 50
Igneolam.	3352"	"	"	"	"	C tubing	66	7 30
Ignie bam.	3353 - 6	"	"	1½	"	pipe	66	7 20
Igniferam.	3354—''	"	"	"	"	C tubing	"	7 00
Ignituram.	3355—7	"	"	"	"	pipe	"	7 60
Ignivomam.	3356—''	"	"	"	"	C tubing	"	7 30
Ignorabam.	3357—8	"	"	"	"	pipe	66	8 00
Ignotam.	3358—"	"	"	"	"	C tubing	"	7 60

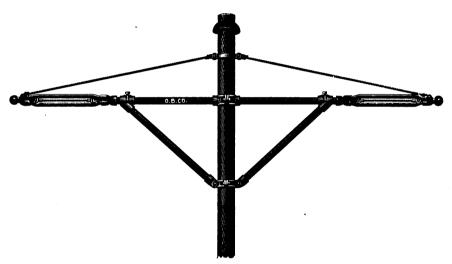
The Bracket lengths as listed are the distances from the pole to the center of the suspension cable in the Bracket End.



#### Patented.

#### Double Bracket, For Iron Poles,

#### Style D.



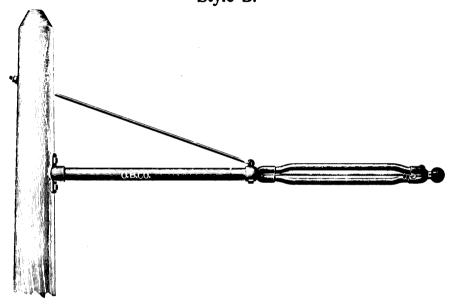
CODE WORD.	NO.								
$\it \Pi igneam.$	33596	Foot	Arm,	1¼	inch	pipe	Each,	\$ 11	90
Illacrimam.	3360"	"	"	"	"	C tubing	"	11	<b>50</b>
Illapsam.	3361—7	"	"	"	"	pipe	"	12	60
$\Pi largiam.$	3362—''	"	"	"	"	C tubing	"	12	10
Illatratam.	3363-8	"	"	"	"	pipe	"	13	40
Illaubatam.	3364"	"	"	"	"	C tubing	"	12	70
$\Pi lectatam.$	3365—6	"	"	1½	"	pipe	"	12	80
Illexeram.	3366—"	"	"	"	"	C tubing	"	12	40
Illidendam.	33677	"	"	"	"	pipe	44	13	60
Illigandam.	3368—''	"	"	"	"	C tubing	"	13	00
Il ligatam.	3369-8	"	"	"	"	pipe	"	14	40
$\Pi linam.$	3370—''	"	"	"	"	C tubing	"	13	70

The Bracket lengths as listed are the distances from the pole to the center of the suspension cable in the Bracket End.



Patented.

## Single Bracket, For Wood Poles, Style B.



CODE WORD.  Abjunctam.		Foot	Arm,	1½	inch	pipe	Each, \$	3	<b>6</b> 0
Illinebam.	3371—''	"	"	"	"	$C \ tubing \ \dots \dots \dots$	"	3	<b>40</b>
Ablactabam.	1018—7	"	"	"	"	pipe	"	3	80
Illinitam.	3372	"	44	"	"	C tubing	"	3	60
Ablatam.	1019—8	"	"	"	"	pipe	"	4	10
Illisam.	3373"	"	"	"	"	C tubing	"	3	80

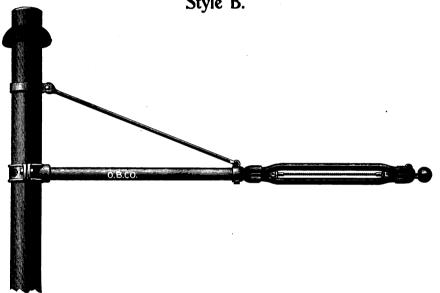
The Bracket lengths as listed are the distances from the pole to the center of the suspension cable in the Bracket End.



#### Patented.

#### Single Bracket, For Iron Poles,





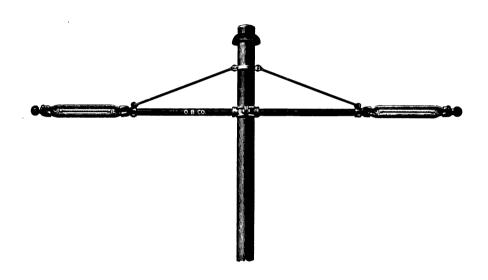
CODE WORD.	NO.								
Balatam.	<b>2006—6</b> 1	Foot	Arm,	1½	inch	pipe	Each,	\$ 5 3	30
Illituram.	3374—''	"	"	"	"	C tubing	"	5 2	20
Balbutiam.	2007—7	"	"	"	"	pipe	"	5 6	30
Illotam.	. 3375—"	"	"	"	"	C tubing	"	5 4	10
Ballabam.	2008-8	"	"	"	"	pipe	"	5 9	<del>)</del> 0
Illucam.	3376"	"	"	"	"	C tubing	"	5 6	30

The Bracket lengths as listed are the distances from the pole to the center of the suspension cable in the Bracket End.



Patented.

# Double Bracket, For Iron Poles, Style B.



CODE WORD.	NO.								
Barbatam.	2015—6 I	Poot	Arm,	1½	inch	pipe	Each,	<b>\$</b> 9	<b>40</b>
Illudiam.	3377"	"	"	"	"	$C\ tubing$	"	9	20
Barbigeram.	2016-7	"	"	"	"	pipe	"	10	00
Illuebam.	3378—''	"	"	"	"	$C\ tubing$	"	9	60
Barriam.	2017—8	"	"	"	"	pipe	"	10	<b>50</b>
Imagina bam.	3379	"	"	"	"	C tubing	"	10	00

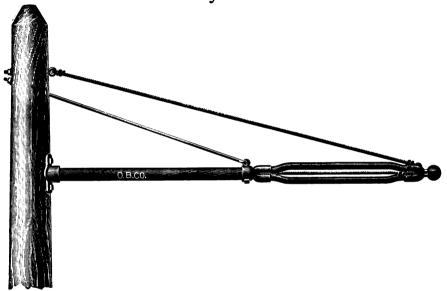
The Bracket lengths as listed are the distances from the pole to the center of the suspension cable in the Bracket End.



Patented.

#### Single Bracket, For Wood Poles,





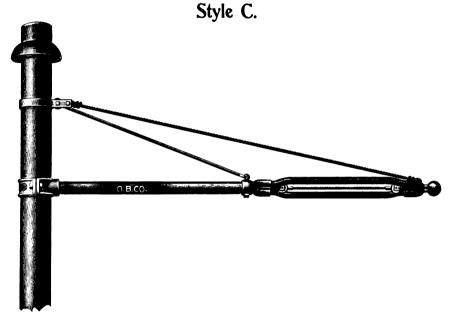
CODE WORD.  Imbelliam.	NO. 3380—6 ]	Foot	Arm,	1½	inch	pipe	Each,	\$ 4	00
Imbibam.	3381—''	"	"	"	"	C tubing	"	3	80
Imbiberam.	3382-7	"	"	"	"	pipe	"	4	20
Imbricabam.	3383"	"	"	"	"	C tubing	"	4	00
Imbriferam.	33848	"	"	"	"	pipe	44	4	60
Imbrificam.	3385—"	"	"	"	"	C tubing	"	4	20

The Bracket lengths as listed are the distances from the pole to the center of the suspension cable in the Bracket End.



#### Patented.

# Single Bracket, For Iron Poles,



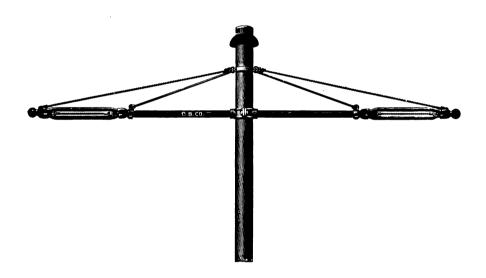
CODE WORD.  Imbuam.		oot	Arm,	1½	inch	pipe	Each,	<b>\$</b> 5	70
Imbuebam.	3387"	"	"	"	"	C tubing	"	5	50
Imbuturam.	33887	"	"	"	"	pipe	"	6	00
Imitabam.	3389-"	"	"	"	"	C tubing	"	5	70
Imit aturam.	3390—8	"	"	"	"	pipe	"	6	20
Imit averam.	3391—"	"	"	"	"	C tubing	"	5	90

The Bracket lengths as listed are the distances from the pole to the center of the suspension cable in the Bracket End.



#### Patented.

### Double Bracket, For Iron Poles, Style C.



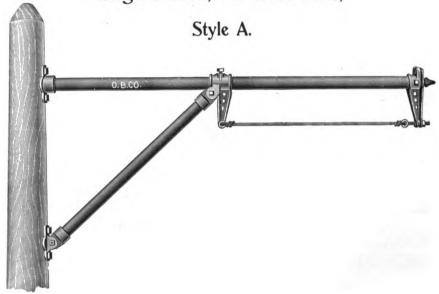
CODE WORD.  Immanebam.		Foot	Arm,	1½	inch	pipeE	ach,	<b>\$ 10</b>	50
Immanseram.	3393"	"	"	"	"	C tubing	"	10	10
Immeabam.	33947	"	"	"	"	pipe	"	11	00
Immeaturam.	3395"	"	"	"	"	C tubing	"	10	60
Immeaveram.	3396—8	"	"	"	"	pipe	"	11	60
Immejebam.	3397"	"	"	"	"	C tubing	"	11	00

The Bracket lengths as listed are the distances from the pole to the center of the suspension cable in the Bracket End.



#### Richmond Flexible Pole Bracket.

Single Bracket, For Wood Poles,

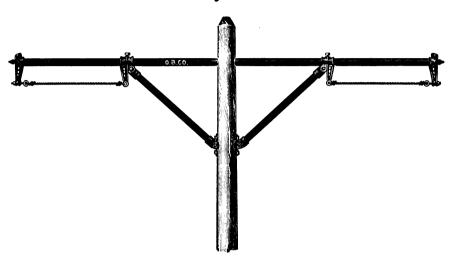


CODE WORD.	NO.								
Egelaveram.	29917	Foot	Arm,	11/4	inch	pipe	Each,	\$ 4	20
Immensam.	3398"	"	"	"	"	C tubing	"	3	80
Egendam.	2992-8	"	"	"	"	pipe		4	50
Immergebam.	3399"	"	"	"	66	C tubing	"	4	00
Egeram.	2993-9	44	"	"	"	pipe		4	90
Immigrabam.	3400-"	"	"	"	"	C tubing		4	40
Egerebam.	29947	"	"	11/2	"	pipe		4	40
Imminendam.	3401-"	"	"	"	"	C tubing		3	90
Egesturam.	2995-8	"	"	"	"	pipe		4	80
Imminuam.	3402-"	"	"	"	"	C tubing	"	4	20
Egulam.	2996-9	"	"	"	"	pipe		5	20
Imminuebam.	3403-"	"	"	"	"	C tubing	44	4	60
Immittam.	3404-7	66	"	2	"	pipe		5	30
Immixturam.	3405"	"	"	"	"	C tubing	"	4	80
Immodestam.	34068	44	4.4	"	66	pipe		5	90
Immodicam.	3407-"	"	"	"	"	C tubing	"	5	20
Immolabam.	3408-9	"	"	"	"	pipe		6	40
Immoratam.	3409-"	"	"	"	"	C tubing	"	5	60

The Bracket lengths as listed are the distances from the pole to the outer end of the horizontal arm, but not including the projecting end casting.

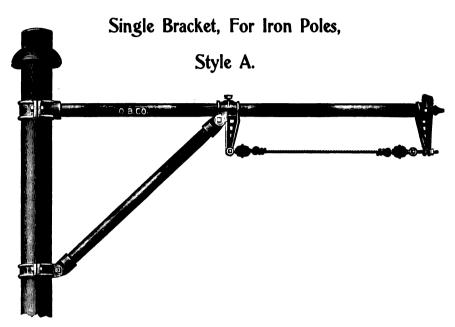
#### Double Bracket, For Wood Poles,

#### Style A.



CODE WORD.	NO.								
Facturam.	3015-7	Foot	Arm,	11/4	inch	pipe	Each,	\$8	00
Immordebam.	3410-"	"	"	"	66	C tubing	"	7	30
Falcatam.	30168	"	"	"	"	pipe		8	70
Immorsam.	3411-"	"	44	"	"	C tubing		7	80
Falciferam.	30179	"	"	"	"	pipe		9	50
Immugiam.	3412-"	"	"	"	"	C tubing		8	40
Falerinam.	30187	"	"	1½	"	pipe		8	60
Immugiebam.	3413-"	"	"	"	"	C tubing	"	7	70
Fallam.	30198	"	"	"	"	pipe		9	40
Immulgeam.	3414-"	"	"	"	"	C tubing		8	30
Fallebam.	3020-9	"	"	44	"	pipe		10	20
Immulgitam.	3415—"	"	44	"	"	C tubing		8	90
Immulseram.	34167	"	4.6	2	"	pipe		10	50
Immuniam.	3417"	"	"	66	"	C tubing		9	30
Immutabam.	3418-8	"	"	"	"	pipe		11	<b>50</b>
Immutescam.	3419"	"	"	"	"	C tubing	"	10	10
Imparatam.	34209	"	"	"	"	pipe		12	60
Imparseram.	3421—''	"	"	"	"	C tubing	"	11	00





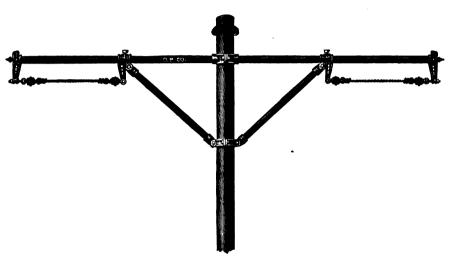
CODE WORD.	NO.								
Ejurandam.	3003-7	Foot	Arm,	11/4	inch	pipe	Each,	\$ 6	60
Impartiam.	3422 - ''	"	"	"	"	C tubing			20
Fabaciam.	30048	"	"	"	"	pipe		7	00
Impedabam.	3423	"	"	"	"	C tubing		6	50
Fabellam.	3005-9		"	"	"	pipe		7	30
Impediam.	3424-"	"	"	"	"	C tubing	"	6	80
Fabricatam.	30067	"	"	1½	"	pipe		6	80
Impediebam.	·3425—''	"	"	"	"	C tubing		6	40
Fabrituram.	3007-8	"	"	"	"	pipe		7	20
Impegeram.	3426	"	"	"	"	C tubing		6	70
Fabriveram.	3008-9	"	66	"	"	pipe		7	70
Impellam.	3427—"	"	"	"	"	C tubing	4.6	7	10
Impellebam.	3428 - 7	"	"	2	"	pipe	"	7	90
Impendam.	3429-"	"	44	"	"	C tubing	"	7	30
Impendebam.	34308	"	66	"	"	pipe		8	40
Imperandam.	3431-"	"	"	"	"	C tubing	"	7	70
Impercam.	3432 - 9	"	"	"	"	pipe		9	00
Impertitam.	3433"	"	"	"	"	C tubing	. "	8	<b>2</b> 0

The Bracket lengths as listed are the distances from the pole to the outer end of the horizontal arm, but not including the projecting end casting.



#### Double Bracket, For Iron Poles,

#### Style A.

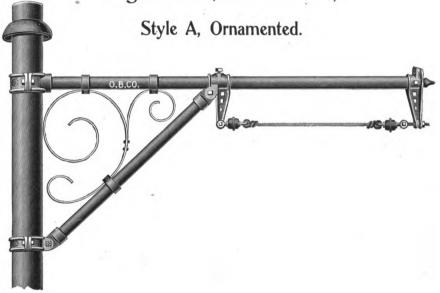


CODE WORD.	NO.								
Famicosam.	30277	Foot	Arm,	11/4	inch	pipe	Each,	\$11	60
Impetam.	3434''	"	"	"	"	C tubing	"	10	90
Farcinabam.	3028-8	"	"	"	"	pipe	"	12	30
Impetebam.	3435- ''		66	"	"	C tubing		11	40
Farinam.	3029 - 9	"	66 -	"	"	pipe	. "	13	10
Impetratam.	3436"		"	"	"	C tubing	66	12	10
Farratam.	3030-7	"	66	11/2	"	pipe		12	10
Impetriam.	3437- ''	"	66	"	"	C tubing	"	11	<b>3</b> 0
Fascinatam.	3031-8	"	"	66	"	pipe		13	00
Impiam.	3438 - "	"	"	"	"	C tubing	"	11	90
Fassuram.	3032 -9	"	"	"	"	pipe		13	80
Impiandam.	3439- ''		"	"	"	C tubing	"	12	<b>6</b> 0
Impiatam.	3440-7	"	66	2	"	pipe		14	<b>3</b> 0
Impicabam.	3441 -"		"	"	"	C tubing	"	13	10
Impingam.	3442 - 8	"	"	"	"	pipe		15	30
Impingebam.	3443"		"	"	"	C tubing	" "	13	90
Implagabam.	3444-9	"	"	"		pipe	"	16	<b>4</b> 0
Implebam.	3445 '	"	"	"	"	C tubing	"	14	80

The Bracket lengths as listed are the distances from the pole to the outer end of the horizontal arm, but not including the projecting end casting.



Single Bracket, For Iron Poles,

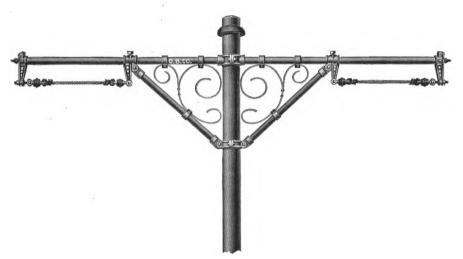


CODE WORD.	NO.								
Implectam.	3446-7	Foot	Arm,	11/4	inch	pipe	Each,	\$8	90
Implendam.	3447—"	"	"	"	"	C tubing	"	8	10
Impleturam.	3448-8	"	"	"	"	pipe		9	60
Implexam.	3449-"	"	"	"	"	C tubing	"	8	70
Implexuram.	3450-9	"	"	"	"	pipe	"	10	40
Implicatam.	3451-"	"	"	"	"	C tubing	"	9	30
Implorabam.	3452 - 7	"	"	1½	"	pipe		9	40
Impluebam.	3453"	"	"	"	"	C tubing		8	30
Implutam.	3454-8	"	"	"	"	pipe		10	10
Impolitiam.	3455"	"	"	"	"	C tubing		8	90
Impollutam.	3456 - 9	"	"	"	"	pipe		11	00
Imponam.	3457"	"	"	"	"	C tubing		9	60
Imponebam.	3458-7	66	"	2	"	pipe		11	00
Imporcabam.	3459"	"	"	"	4.6	C tubing	"	9	60
Importatam.	3460-8	"	"	"	"	pipe		11	90
Impostam.	3461-"	"	"	"	"	C tubing		10	40
Imposueram.	3462-9	"	"	"	"	pipe		13	00
Imprimam.	3463"	"	"	"	"	C tubing	"	11	20

The Bracket lengths as listed are the distances from the pole to the outer end of the horizontal arm, but not including the projecting end casting.



# Double Bracket, For Iron Poles, Style A, Ornamented.

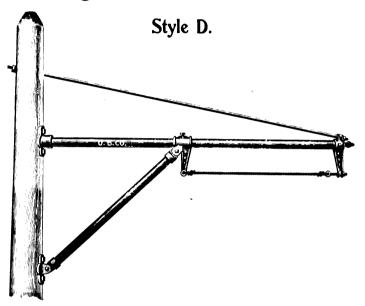


CODE WORD.	NO.								
Imprime bam.	3464 - 7	Foot	Arm,	11/4	inch	pipe	Each,	<b>\$</b> 16	60
Improbabam.	3465 -"	"	"	"	"	C tubing	"	15	00
Impropriam.	3466 8	"	"	"	"	pipe		18	00
Improvisam.	3467- ''	"	"	"	"	C tubing	"	16	20
Impugnaham.	3468 - 9	"	"	"	4.6	pipe		19	70
Impuleram.	3469 -"	"	"	"	"	C tubing		17	<b>5</b> 0
Impunitam.	3470 - 7	"	"	1½	"	pipe		17	<b>5</b> 0
Impurabam.	3471"	"	"	"	"	C tubing	"	15	<b>50</b>
Imputandam.	3472 - 8	"	"	"	"	pipe	"	19	10
Imputatam.	3473"	"	4.6	"	"	C tubing		16	70
In albandam.	3474 - 9	44	"	"	44	pipe		20	80
In albatam.	3475-"	"		"	44	C tubing	"	18	10
In albebam.	3476 - 7	"	"	2	"	pipe		20	60
In albes cam.	3477—''	"	"	"	"	C tubing		17	90
In albueram.	<b>3478</b> –8	"	"	"	66	pipe		22	50
In altabam.	3479"	"	"	"	"	C tubing		19	30
In an im am.	3480 - 9	"	"	"	"	pipe		24	60
${\it In an ituram.}$	3481"	"	"	"	"	C tubing	"	20	90

The Bracket lengths as listed are the distances from the pole to the outer end of the horizontal arm, but not including the projecting end casting.

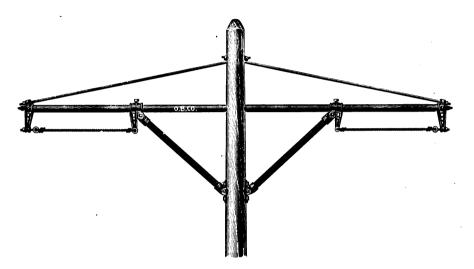


Single Bracket, For Wood Poles,

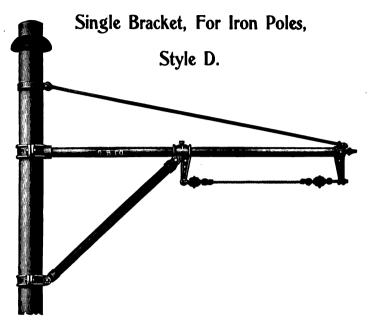


CODE WORD.	NO.								
Inaquatam.	3484 8	Foot	Arm,	11/4	inch	pipe	Each,	\$ 5	00
In a rabam.	3485 - "	"	4.6	"	"	C tubing	"	4	50
In a raturam.	3486 9	"	6.6	"	"	pipe		5	40
Inaraveram.	3487 "	"	"	".	"	C tubing	"	4	80
An claturus.	5504-10	66	"	"	66	pipe		5	60
Anclavimus.	5505 ''	4.6	"	"	"	C tubing	"	5	00
In audie bam.	3490 — 8	4.6	"	1 1/2	"	pipe	"	5	20
Inauditam.	3491 "	"	"	"	"	C tubing	"	4	70
In aur and am.	3492 - 9	"	"	"	"	pipe		5	70
Inauratam.	3493 ''	"	"	"	"	C tubing	"	5	10
Aneticus.	5506 - 10	"	"	"	"	pipe	4.6	5	90
Angarius.	5521—''	"	"	"	"	C tubing	"	5	30
In callabam.	3496 8	"	"	2	"	pipe	"	6	30
Incalueram.	3497 ''	"	"	"	"	C tubing	"	5	60
In can escam.	3498 9	"	"	6.6	"	pipe	"	6	90
In cantabam.	3499 ''	4.6	4.4	• 6	"	C tubing	"	6	10
Angendus.	5522 - 10	"	"	"	4.6	pipe	"	7	20
Angiturus.	5529 ''	"	"	"	"	C tubing	"	6	30

# Double Bracket, For Wood Poles, Style D.



CODE WORD.	NO.								
In cavandam.	3502 8	Foot	Arm,	11/4	inch	pipe	Each,	<b>\$</b> 9	60
Incavatam.	3503 "	"	"	"	"	C tubing	"	8	70
Incedebam.	3504 9	44	"	"	"	pipe	"	10	40
Incenderam.	3505 "	"	"	"	"	C tubing	"	9	30
Anguineus.	5530-10	"	"	66	"	pipe	"	10	80
Anguinibus.	5537 "	66	"	66	"	C tubing	"	9	<b>6</b> 0
Inceptabam.	3508 8	"	"	11/2	66	pipe	"	10	20
Incepturam.	3509 "	"	"	"	"	C tubing	"	9	20
Incernam.	3510-9	"	"	"	6.6	pipe	"	11	20
Incernebam.	3511 "	"	"	"	"	C tubing	"	9	90
Angulamus.	553810	"	"	"	"	pipe	"	11	70
Angustamus.	5629 ''	44	"	"	"	C tubing	"	10	30
Incibabam.	3514 8	"	"	2	"	pipe	"	12	<b>4</b> 0
Incidendam.	3515 "	"	"	"	66	C tubing	"	11	00
Incilandam.	3516 9	"	"	"	"	pipe	"	13	<b>6</b> 0
Incilatam.	3517- "	"	"	"	"	C tubing	"	11	90
Anhelamus.	5630-10	"	"	"	"	pipe	"	14	20
An ima bamus.	5631 ''	"	"	"	"	C tubing	"	12	10

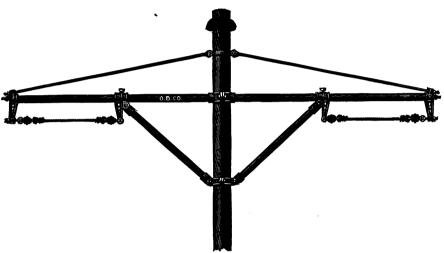


CODE WORD.	NO.								
Incinxeram.	<b>3520</b> 8	Foot	Arm,	11/4	inch	pipe	Each,	\$ 7	80
Incipiam.	3521- ''	"	"	"	"	C tubing	"	7	30
Inclamabam.	3522 9	"	"	"	"	pipe		8	20
Inclinabam.	3523 "	"	"	"	"	C tubing	"	7	70
Animalibus.	563210	"	"	"	"	pipe		8	40
Animaturus.	5633 "	"	"	"	"	C tubing	"	7	80
Include bam.	3526 8	"	"	1½		pipe	66	8	10
Incluseram.	3527 "	"	"	"		C tubing	"	7	60
Incoctam.	3528 9	"	"	"	"	pipe		8	50
Incolebam.	3529 "	"	"	"	"	C tubing		7	90
Animavimus.	563410	"	"	"	"	pipe		8	80
Annalibus.	5635— ''	"	"	"	"	C tubing	"	8	10
Incoquam.	<b>3532</b> — 8	"	"	2	"	pipe	66	9	40
Incoquebam.	3533 "	"	"	"	"	C tubing	"	8	70
Incoram.	3534 9	"	"	"	"	pipe	66	10	00
Incoxabam.	3535 "	"	"	"	"	C tubing	"	9	20
Annarius.	563610	"	"	"	"	pipe	"	10	30
Annat and us.	5637 ''	"	"	"	"	C tubing	"	9	<b>5</b> 0

The Bracket lengths as listed are the distances from the pole to the outer end of the horizontal arm, but not including the projecting end casting.

#### Double Bracket, For Iron Poles,

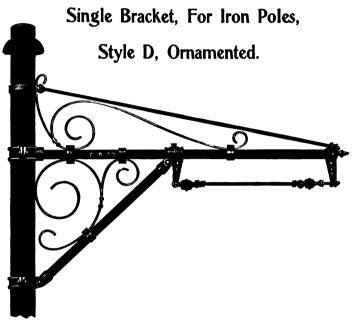
#### Style D.



CODE WORD.	NO.								
Increpabam.	3538— 8	Foot	Arm,	11/4	inch	pipe	Each,	<b>\$1</b> 3	70
Increturam.	3539—"	66	"	"	"	C tubing	. "	12	80
Increveram.	3540 9	"	"	"	66	pipe	. "	14	<b>5</b> 0
Incubandam.	3541—"	"	"	"	"	C tubing	. "	13	<b>40</b>
Annatatus.	5638 - 10	"	"	"	"	pipe		15	00
Annatemus.	5639— ''	"	"	"	"-	C tubing	. "	13	80
Incubueram.	<b>3544</b> — 8	"	"	1½	"	pipe		14	40
Inculcabam.	3545 "	"	4.6	"	"	C tubing	"	13	<b>3</b> 0
Incumbabam.	3546—9	"	4.6	"	"	pipe		15	<b>3</b> 0
Incursabam.	3547—"	"	"	"	"	C tubing	. "	14	00
Annexibus.	5640 - 10	"	"	"	"	pipe	. "	15	80
Annexuimus.	5641—"	"	"	"	"	C tubing		14	40
Incutiebam.	3550—8	"	44	2	"	pipe		16	70
Indagabam.	3551—"	"	"	"	"	C tubing		15	30
Indebam.	3552 9	"	"	"	"	pipe		17	80
Indeflexam.	3553 "	"	46	"	"	C tubing	. "	16	20
Annianus.	5642 - 10	"	"	"	"	pipe		18	50
Annictemus.	5643 ''	"	"	"	"	C tubing		16	70

The Bracket lengths as listed are the distances from the pole to the outer end of the horizontal arm, but not including the projecting end casting.



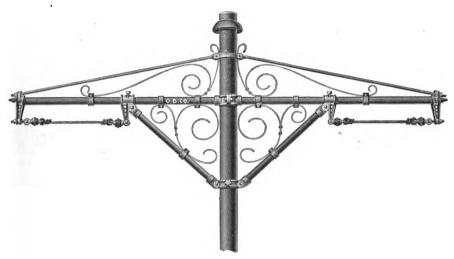


CODE WORD.	NO.								
Indicendam.	3556 8	Foot	Arm,	11/4	inch	pipe	Each,	<b>\$</b> 12	20
Indicinam.	3557 ''	"	"	4.6	"	C tubing	"	11	20
Indictam.	<b>3558</b> – <b>9</b>	"	"	"	"	pipe		13	10
Indictivam.	3559 "	"	"	"	"	C tubing		11	90
Annisus.	564410	"	"	"	"	pipe		14	00
Annodandus.	5645 ''	"	"	"	6.6	C tubing		12	60
Indiguam.	3562- 8	"	"	11/2	"	pipe		12	70
Indigueram.	3563 ''	"	"	"		C tubing	"	11	50
Indireptam.	3564 9	"	"	"	"	pipe		13	60
Indisertam.	3565 "	"	"	"	"	C tubing	"	12	20
Annodatus.	564610	"	"	"	"	pipe		14	50
Annuendus.	5817 "	"	"	"	"	C tubing		12	90
Indubiam.	<b>3568</b> - 8	"	"	2	"	pipe		14	50
Inducturam.	3569 "	"	"	"	"	C tubing		12	90
Induendam.	3570 9	"	"	"	"	pipe	"	15	60
Indueram.	3571 "	"	"	4.6	"	C tubing	"	13	80
Annullamus.	<b>5818</b> 10	"	"	"	"	pipe	"	16	70
Annutrimus.	5819"	"	44	"	"	C tubing	"	14	70

The Bracket lengths as listed are the distances from the pole to the outer end of the horizontal arm, but not including the projecting end casting.



# Double Bracket, For Iron Poles, Style D, Ornamented.

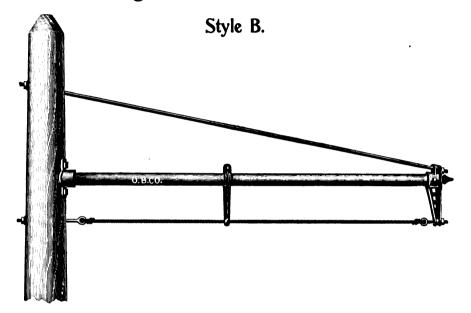


CODE WORD.	NO.								
Indurescam.	3574 - 8	Foot	Arm,	11/4	inch	pipe	Each,	\$22	80
Indusia bam.	3575 "	"	"	"	"	C tubing	"	20	90
Industriam.	3576- 9	"	"	"	"	pipe	. "	24	60
Induturam.	3577 - "	"	"	"	"	C tubing		22	40
Anteceptus.	5820 - 10	"	"	"	"	pipe		26	40
Antestamus.	5821"	"	"	"	"	C tubing	""	23	90
Inegeram.	3580 8	"	"	1½	"	pipe		23	80
Ineptiam.	3581 "	66	"	"	"	C tubing	. "	21	50
Ineptiebam.	3582- 9	"	"	"	44	pipe		25	70
Inesam.	3583 - "	"	"	"	"	C tubing		23	00
Anteversus.	582210	"	"	"	"	pipe		27	60
Anulaturus.	5823- ''	"	"	"	"	C tubing	. "	24	50
In facundam.	<b>3586</b> - 8	"	"	2	"	pipe		27	30
In famabam.	3587 - "	"	"	"	66	C tubing	. "	24	10
Infamiam.	3588 9	"	4.6	"	"	pipe		29	<b>5</b> 0
Infantatam.	3589- "	"	"	"	"	C tubing	"	25	80
Anxia bamus.	6360 - 10	"	"	"	"	pipe		31	70
Anxiamus.	6361 — ''	66	"	"	"	C tubing	"	27	<b>5</b> 0

The Bracket lengths as listed are the distances from the pole to the outer end of the horizontal arm, but not including the projecting end casting.



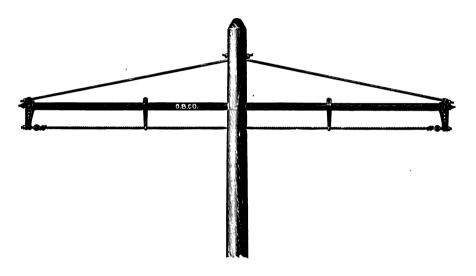
#### Single Bracket, For Wood Poles,



CODE WORD.	NO.							
Ejectandam.	2998 8	Foot	Arm,	1½	inch	pipe	Each,	\$ 3 80
Infarciam.	3591—"	"	"	"	"	C tubing	"	3 30
Ejulaveram.	3001 "	"	"	"	4.6	A "	"	3 20
Ejulabam.	2999 9	"	"	"	"	pipe	"	4 10
Infarsuram.	3592 "	"	"	"	"	C tubing	"	3 50
Ejulitabam.	3002 "	"	"	"	"	A "	"	3 40
Anxiaremus.	6362-10	"	"	"	"	pipe	"	4 30
Anxiaturus.	6363—"	"	"	"	"	C tubing	"	3 70
Aperimus.	6364"	"	"	"	"	A "	"	3 60
Inferam.	3596 8	"	"	2	"	pipe	"	4 80
Infervebam.	3597 "	"	"	"	"	C tubing	"	4 20
Infestabam.	3598- "	"	"	"	"	A "	"	4 00
Inficetam.	3599 9	"	"	"	"	pipe	"	<b>5 1</b> 0
Infigendam.	3600 "	"	"	"	"	C tubing	"	4 40
Infimandam.	3601 "	"	"	"	"	A "	"	4 30
Apibus.	636510	"	"	"	"	pipe	"	5 40
Appangimus.	6366—"	"	"	"	"	C tubing	"	4 70
Apparendus.	6367—''	"	"	"	"	A "	"	4 60

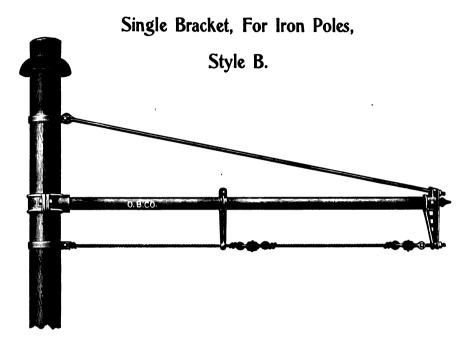


# Double Bracket, For Wood Poles, Style B.



CODE WORD.	NO.								
Falsaturam.	3022-	8 Foot	Arm,	11/2	inch	pipe	Each,	\$ 7	7 00
Infindam.	3603-	"	"	"	"	C tubing	"	6	00
Famam.	3025-	"	"	"	"	A "	"	Ę	70
Falsaveram.	3023	9 "	"	"	4.6	pipe	"	7	7 50
In fin de bam.	3604-	"	"	"	"	C tubing	"	•	3 40
Famatam.	3026-	"	"	"	"	A "	"	•	3 10
Apparitus.	6368-1	0 "	"	"	"	pipe	"	8	3 00
Apparuimus.	6369 '		"	"	"	C tubing	"	(	80
Appegimus.	6370		"	"	"	A "	"	(	5 50
Inflaturam.	3608	8 "	"	2	"	pipe	"	8	80
Inflaveram.	3609	"	"	"	"	C tubing	"	7	7 50
Inflexeram.	3610	"	"	"	"	A "	"	7	7 30
Infligam.	3611	9''	"	"	"	pipe	"	9	50
Inflige bam.	3612	"	"	"	"	C tubing	"	8	3 10
Influam.	3613—	"	"	"	"	A "	"	7	7 90
Appellamus.	6371-1	0 "	"	"	"	pipe	"	10	20
Appendimus.	6372		"	"	"	C tubing	"	8	60
Appetamus.	6373—'		44	"	"	A "	"	8	3 40



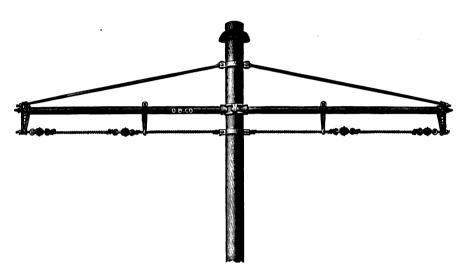


CODE WORD.	NO.								
Facetam.	<b>3</b> 010 — 8	Foot	Arm,	1½	inch	pipe	Each,	\$ 6	10
${\it Inflorabam}.$	3615— "	"	"	"	"	C tubing	"	5	60
Faciam.	3011 9	"	"	"	"	pipe	"	6	30
Informatam.	3616 "	"	"	"	"	C tubing	"	5	80
Appiadibus.	6374 10	"	"	"	"	pipe	"	6	60
Apponimus.	6375-"	"	"	"	"	C tubing	66	6	00
In fremam.	3620 8	"	"	2	"	pipe	"	7	<b>3</b> 0
In freme bam.	3621 "	"	"	"	"	C tubing	"	6	70
In frendeam.	3623 9	"	"	"	"	pipe	"	7	60
Infriandam.	3624 - "	"	"	"	"	C tubing	"	6	90
Apportamus.	6376—10	"	"	"	"	pipe	"	8	00
Apposuimus.	6377:"	"	"	"	"	C tubing	"	7	20

The Bracket lengths as listed are the distances from the pole to the outer end of the horizontal arm, but not including the projecting end casting.



# Double Bracket, For Iron Poles, Style B.

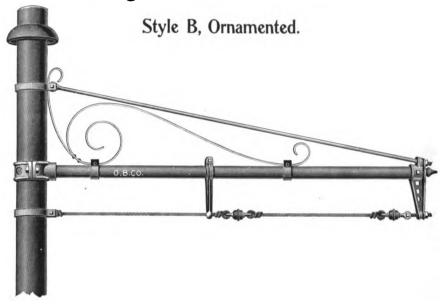


CODE WORD.	NO.								
Fastosam.	3034— 8	Foot	Arm,	$1 \frac{1}{2}$	inch	pipe	Each,	<b>\$10</b>	70
Infrigidam.	3627 "	"	"	"	66	C tubing	"	9	70
Faticinam.	3035 9	"	"	"	"	pipe	"	11	20
Infringam.	3628 "	"	"	"	"	C tubing	"	10	10
Appoturus.	637810	"	"	"	. "	pipe	"	11	70
Appronatus.	6379 – ''	"	"	"	"	C tubing	"	10	<b>5</b> 0
Infusam.	3632 - 8	"	"	2	"	pipe	"	12	70
Ingemam.	3633 "	"	"	"	"	C tubing	4.	11	40
In gemiscam.	3635 9	"	"	"	"	pipe	"	13	40
Inemueram.	3636- "	"	"	"	"	C tubing	"	12	00
Appulimus.	6380 10	"	4.6	"	"	pipe	"	14	00
Appulsurus.	6381- ''	"	"	"	"	C tubing		12	60

The Bracket lengths as listed are the distances from the pole to the outer end of the horizontal arm, but not including the projecting end casting.



Single Bracket, For Iron Poles,

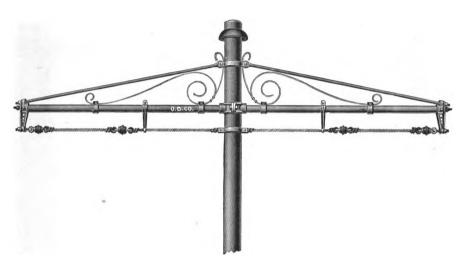


CODE WORD.	NO.								
Ingignam.	3641 - 8	Foot	Arm,	1½	inch	pipe	Each,	<b>\$</b> 8	60
Inglomeram.	3642- "	"	"	"	"	C tubing	"	7	<b>6</b> 0
Ingravabam.	<b>3644</b> — 9	"	"	"	"	pipe	"	9	00
In gravidam.	3645 ''	"	"	"	"	C tubing	"	7	90
Apriclus.	6382—10	"	"	"	"	pipe	"	9	40
Aprilibus.	6383 ''	"	"	"	"	C tubing	"	8	20
In hae suram.	3650 8	"	"	2	"	pipe	"	10	00
Inhibe bam.	3651 "	"	"	"	"	C tubing	"	8	80
Inhumabam.	3653 9	"	"	"	"	pipe	"	10	60
Inigam.	3654 "	"	"	"	"	C tubing	"	9	20
A proxibus.	638410	"	"	"	"	pipe	44	11	20
Apsyrtibus.	6385"	"	"	"	"	C tubing	"	9	60

The Bracket lengths as listed are the distances from the pole to the outer end of the horizontal arm, but not including the projecting end casting.



# Double Bracket, For Iron Poles, Style B, Ornamented.

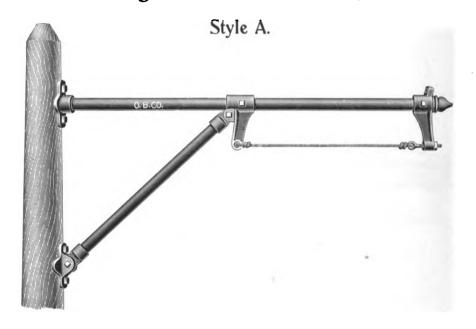


CODE WORD.	NO.								
Injectabam.	3659— 8 I	Foot	Arm,	1½	inch	pipe	Each,	\$15	70
Injectivam.	3660—"	"	"	"	"	C tubing	"	13	90
Injunxeram.	3662 9	4.4	"	"	"	pipe	"	16	60
Injustam.	3663 "	"	"	"	"	C tubing	"	14	60
Aptantibus.	638610	"	"	"	"	pipe	"	17	<b>5</b> 0
Aptaremus.	6387— ''	"	"	"	"	C tubing	"	15	30
In nectam.	3668 8	"	"	2	"	pipe	"	18	40
Innectebam.	3669—"	"	"	"	"	C tubing	"	16	00
Innisuram.	3671—9	"	"	"	"	pipe	"	19	<b>5</b> 0
Innixam.	3672—"	"	"	"	"	C tubing	"	16	80
Aptavimus.	638810	"	"	"	"	pipe	"	20	<b>6</b> 0
Aqualibus.	6389— ''	"	"	"	"	C tubing	"	17	60

The Bracket lengths as listed are the distances from the pole to the outer end of the horizontal arm, but not including the projecting end casting.



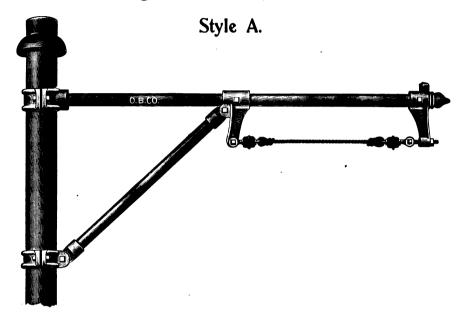
# Detroit Flexible Pole Bracket. Single Bracket, For Wood Poles,



CODE WORD.	NO.								
Innotabam.	3674 - 7	Foot	Arm,	1½	inch	pipe	Each,	\$ 4	<b>60</b>
In notue ram.	3675- ''	44	"	"	"	C tubing	"	4	20
Innovandam.	36768	"	4.6	"	"	pipe	"	5	00
Innovatam.	3677"	"	"	"	"	C tubing	"	4	60
Innoxiam.	3678- 9	"	"	"	44	pipe	"	5	<b>5</b> 0
In nubendam.	3679 ''	"	4.6	"	"	C tubing	4.6	4	90
Innupturam.	36807	"	"	2	"	pipe	"	5	60
In obaudiam.	3681"	"	"	"	"	C tubing	"	5	00
In obediam.	3682 - 8	"	"	"	"	pipe	"	6	10
In occultam.	3683"	"	44	"	"	C tubing	"	5	<b>40</b>
In odorabam.	36849	44	4.6	"	4.6	pipe	"	6	70
${\it In olever am.}$	3685''	"	"	"	"	C tubing	"	5	90



#### Single Bracket, For Iron Poles,

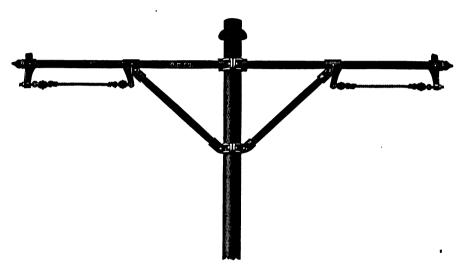


CODE WORD.	NO.								
In olitam.	<b>3686-7</b> 3	Foot	Arm,	1½	inch	pipe	Each,	\$ 7	30
In opertam.	3687	"	"	"	í i	C tubing	"	7	00
In or and am.	3688 8	"	"	"	"	pipe	"	7	70
In or at am.	3689 ''	"	"	"	"	C tubing	"	7	30
In ornabam.	36909	"	"	"	"	pipe	"	8	<b>2</b> 0
Inquinabam.	3691- "	"	"	"	"	C tubing	"	7	60
Inquiram.	3692-7	"	"	2	"	pipe	"	8	50
Inquirebam.	3693 "	"	"	"	"	C tubing	"	8	00
Insaniebam.	36948	"	"	"	"	pipe	"	ç	00
Insaturam.	3695 -"	"	"	"	"	C tubing	"	8	40
Insculotam.	3696-9	"	"	"	"	pipe	"	9	60
Insectatam.	3697"	"	"	"	"	C tubing	"	8	80

The Bracket lengths as listed are the distances from the pole to the outer end of the horizontal arm, but not including the projecting end casting.



# Double Bracket, For Iron Poles, Style A.

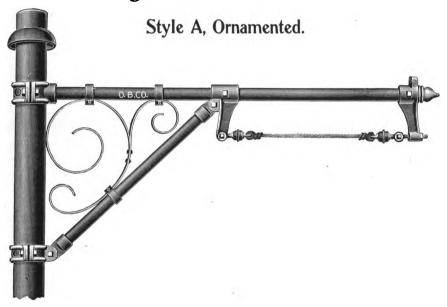


CODE WORD.	NO.								
In secturam.	36987	Foot	Arm,	1½	inch	pipe	Each,	\$13	20
In secundam.	3699—"	"	"	. "	"	C tubing		12	40
${\it Insederam.}$	3700-8	"	"	"	"	pipe	"	14	00
In senes cam.	3701"	"	"	"	"	C tubing	"	13	00
Inseptam.	3702-9	"	"	"	"	pipe	"	14	90
Insertabam.	3703"	"	"	"	"	C tubing		13	<b>60</b>
Inservatam.	3704-7	"	46	2	"	pipe	"	15	90
Inserviam.	3705	"	"	"	"	C tubing	. "	14	80
Insidebam.	3706-8	"	"	"	"	pipe		16	90
${\it Insidiabam}.$	3707"	"	"	"	"	C tubing	"	15	<b>60</b>
In signabam.	3708—9	"	"	"	"	pipe		18	10
In signitam.	3709"	"	"	"	"	C tubing	"	16	<b>50</b>

The Bracket lengths as listed are the distances from the pole to the outer end of the horizontal arm, but not including the projecting end casting.



Single Bracket, For Iron Poles,

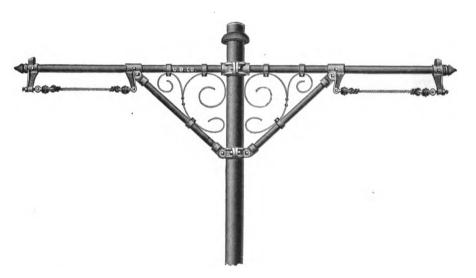


CODE WORD.	NO.								
Insiliam.	37107	$\mathbf{Foot}$	Arm,	1½	inch	pipe	Each,	<b>\$10</b>	10
${\it Insilueram}.$	3711—"	"	"	"	"	C tubing	"	9	10
Insinceram.	3712-8	"	"	"	"	pipe	"	10	80
In sipam.	3713—"	"	"	"	"	C tubing	"	9	70
Insistam.	37149	"	"	"	"	pipe	"	11	70
In sistebam.	3715"	"	46	"	"	C tubing	"	10	40
In sitivam.	37167	"	"	2	"	pipe	"	11	70
${\it Insolandam.}$	3717—"	"	"	"	"	C tubing	"	10	40
Insolitam.	3718-8	66	"	"	"	pipe	"	12	70
Insomniam.	3719"	"	"	"	"	C tubing	"	11	10
In sonabam.	3720-9	"	"	"	"	pipe	"	13	70
Insonueram.	3721"	"	"	"	"	C tubing	"	11	90

The Bracket lengths as listed are the distances from the pole to the outer end of the horizontal arm, but not including the projecting end casting.



# Double Bracket, For Iron Poles, Style A, Ornamented.

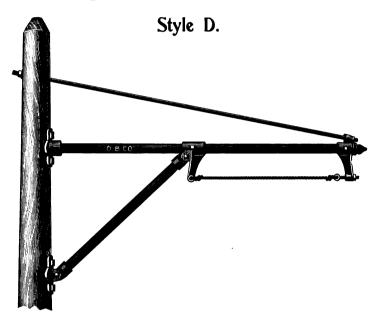


CODE WORD.	NO.								
In sparsam.	3722-7	Foot	Arm,	1½	inch	pipe	Each,	<b>\$19</b>	00
In sper gam.	3723—''	"	"	"	"	C tubing	. "	16	90
In spue bam.	37248	"	66	"	"	pipe	. "	20	<b>50</b>
In spumabam.	3725	"	"	"	"	C tubing		18	10
Insputatam.	3726 - 9	"	66	"	"	pipe	. "	22	30
Insputuram.	3727-"	"	"	"	"	C tubing	. "	19	<b>5</b> 0
Instabam.	3728 - 7	"	"	2	"	pipe	. "	22	00
Insternam.	3729-"	"	"	"	"	C tubing		19	30
Instigabam.	3730-8	"	"	"	"	pipe	. "	23	90
Instinguam.	3731—''	"	"	"	"	C tubing	. "	20	70
Instipatam.	37329	"	"	"	"	pipe	. "	26	00
Institeram.	3733''	"	"	"	"	C tubing	. "	22	30

The Bracket lengths as listed are the distances from the pole to the outer end of the horizontal arm, but not including the projecting end casting.

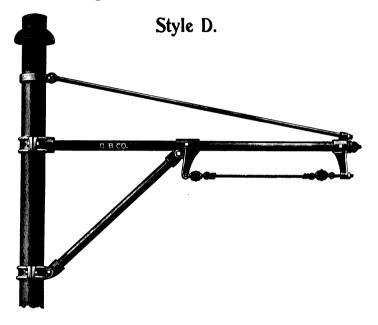


#### Single Bracket, For Wood Poles,



CODE WORD.	NO.							
Instruebam.	3736— 8	Foot	Arm,	1½	inch	pipe	Each,	\$ 5 60
${\it Instupe bam.}$	3737—"	"	"	"	"	C tubing	"	5 10
${\it Insuccabam.}$	3738 9	"	"	"	"	pipe	"	6 00
In sudabam.	3739 ''	"	"	"	"	C tubing	"	5 40
Aquensibus.	6390—10	"	"	"	"	pipe	"	6 30
A ratramus.	6391—''	"	66	"	"	C tubing	"	5 60
Insulanam.	3742 8	"	"	2	"	pipe	"	6 60
Insulcatam.	3743 ''	"	"	"	"	C tubing	"	6 00
Insulosam.	3744— 9	"	"	"	"	pipe	"	7 20
In sultabam.	3745—"	"	"	"	"	C tubing	"	6 40
Arcadibus.	6392—10	"	44	"	"	pipe	"	7 50
Arceamus.	6393"	"	"	"	"	C tubing	"	6 70

Single Bracket, For Iron Poles,

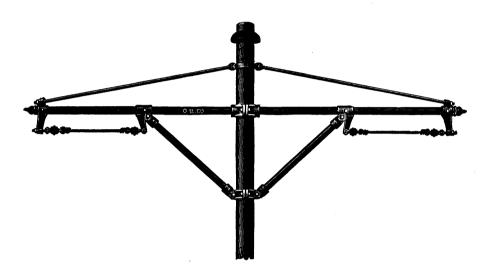


CODE WORD.	NO.								
In tabes cam.	<b>3748</b> — 8 1	Foot	Arm,	1½	inch	pipe	Each,	\$8	70
In tabueram.	3749—"	"	"	"	"	C tubing	"	8	20
Intardabam.	3750 9	"	"	"	"	pipe	"	9	20
Integam.	3751—"	"	"	"	"	C tubing	"	8	50
Arcebimus.	639410	"	"	"	"	pipe	"	9	<b>4</b> 0
Arctabamus.	6395 ''	"	"	"	"	C tubing	"	8	70
Intelligam.	3754—8	"	"	2	"	pipe	"	10	00
Intendam.	3755—"	"	4.6	"	"	C tubing	"	9	30
Intendebam.	3756 9	"	"	"	"	pipe	"	10	50
Intentabam.	3757 "	"	"	"	"	C tubing	"	9	72
Arctaturus.	6396 - 10	"	"	"	"	pipe	"	10	90
Arctamus.	6397 ''	"	"	"	"	C tubing	"	10	00

The Bracket lengths as listed are the distances from the pole to the outer end of the horizontal arm, but not including the projecting end casting.



# Double Bracket, For Iron Poles, Style D.

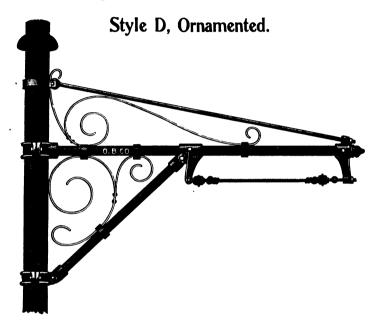


CODE WORD.	NO.								
Interaneam.	3760— 8	Foot	Arm,	1½	inch	pipe	Each,	<b>\$15</b>	60
Interdabam.	3761—"	"	"	"	"	C tubing	"	14	60
Interfluam.	3762 9	"	"	"	"	pipe	"	16	<b>50</b>
Interfuram.	3763 "	"	"	"	"	C tubing	"	15	30
Arctavimus.	6398—10	"	"	"	"	pi <b>pe</b> .	"	17	10
Arcuandus.	6399 "	"	"	"	. "	C tubing	"	15	70
Interlegam.	3766— 8	"	"	2	"	pipe	"	17	80
Interlidam.	3767— ''	"	"	"	"	C tubing	"	16	40
Interlucam.	3768— 9	"	"	"	"	pipe	"	18	90
Internam.	3769 "	"	"	"	"	C tubing	"	17	<b>3</b> 0
Arcuerimus.	6400—10	"	"	"	"	pipe	"	19	60
Arcuimus.	6401—''	"	"	"	"	C tubing	"	18	00

The Bracket lengths as listed are the distances from the pole to the outer end of the horizontal arm, but not including the projecting end casting.



Single Bracket, For Iron Poles,

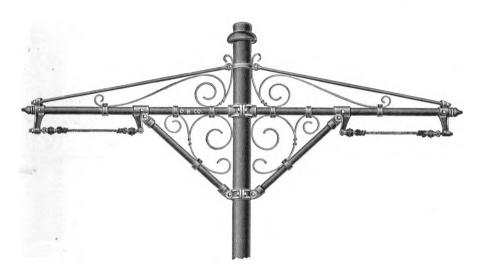


CODE WORD.	NO.								
Interrogam.	3772 8	Foot	Arm,	1½	inch	pipe	Each,	<b>\$</b> 13	<b>40</b>
Intersitam.	3773— ''	"	"	"	"	C tubing		12	20
Intersonam.	3774 9	"	"	"	"	pipe	"	14	30
Intertexam.	3775 ''	"	"	"	"	C tubing		13	00
Arculatus.	640210	"	"	"	"	pipe	44	15	20
Ardebamus.	6403"	"	"	"	"	C tubing	"	13	80
Intexendam.	3778 8	"	"	2	"	pipe	"	15	20
Intexeram.	3779 ''	"	"	"	"	C tubing	"	13	60
Intexturam.	3780 - 9	"	"	"	"	pipe	46	16	<b>3</b> 0
Intimabam.	3781 ''	"	"	"	"	C tubing	"	14	<b>50</b>
Ardendus.	640410	"	"	"	"	pipe	"	17	<b>40</b>
Arealibus.	6405—''	"	"	"	"	C tubing	"	15	40

The Bracket lengths as listed are the distances from the pole to the outer end of the horizontal arm, but not including the projecting end casting.



# Double Bracket, For Iron Poles, Style D, Ornamented.

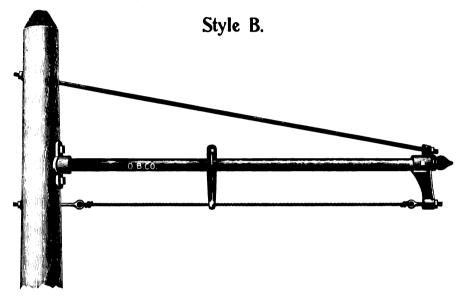


CODE WORD.	NO.								
In tollebam.	3784— 8	Foot	Arm,	1½	inch	pipe	Each,	<b>\$</b> 25	20
Inton and am.	3785 ''	"	"	"	"	C tubing	"	22	90
In ton deram.	3786 9	"	"	"	"	pipe	4.6	27	20
Intonitam.	3787— ''	"	"	"	"	C tubing	"	24	40
Are bimus.	<b>6406</b> 10	"	"	"	"	pipe	"	29	20
Aremus.	6407—"	"	"	"	"	C tubing	"	25	90
Intorturam.	3790 8	"	"	2	"	pipe		28	70
Intrabam.	3791 "	"	"	"	"	C tubing	"	25	50
Intractam.	3792— 9	"	"	"	"	pipe	"	30	90
In trahebam.	3793—"	"	"	"	"	C tubing	"	27	20
Arenatus.	640810	"	"	"	"	pipe	"	33	10
Arentosus.	6409—"	"	"	"	"	C tubing	44	28	90

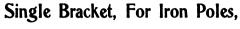
The Bracket lengths as listed are the distances from the pole to the outer end of the horizontal arm, but not including the projecting end casting.

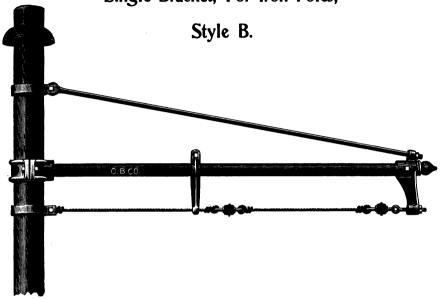


#### Single Bracket, For Wood Poles,



CODE WORD.	NO.									
Intricatam.	3797 8	Foot	Arm,	1½	inch	pipe	Each,	\$ 4	1 20	)
Intriveram.	3798 "	"	"	"	"	C tubing			80	)
Introcedam.	3799 "	"	"	"	"	A "		:	3 60	)
Introducam.	3800 9	"	"	"	"	pi <b>pe.</b>	"	4	1 50	)
Introferam.	3801 "	"	"	"	"	C tubing	"	6	3 90	)
Intrudam.	3802 "	"	"	"	"	A "		;	80	)
Are stibus.	641010	"	"	"	"	pipe	"	4	1 80	)
Argue bamus.	6411—"	"	"	"	"	C tubing		4	1 20	)
Argueremus.	6412"	66	"	"	"	A "		4	1 00	)
Intumueram.	3806 8	"	"	2	"	pipe		ŧ	5 00	)
Inudaturam.	3807—"	"	"	"	"	C tubing	"	4	40	)
Inudaveram.	3808— ''	"	"	"	"	A "		4	1 30	)
Inumbrabam.	3809 9	66	"	"	"	pipe	"	Ę	30	)
Inuncabam.	<b>3810</b> — "	"	66	"	"	C tubing	"	4	1 60	)
Inunctam.	3811—"	"	"	"	"	A "		4	4 60	)
Angutandus.	641310	66	66	"	"	pipe	. "	{	5 70	)
Argutemus.	6414"	".	"	"	"	C tubing	"	4	1 90	)
Aridulus.	6415"	"	"	"	"	A "		4	1 80	)

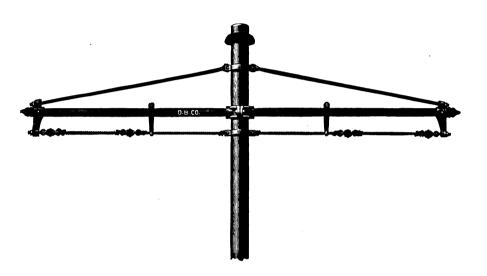




CODE WORD.	NO.								
Inungebam.	3815 8 ]	Foot	Arm,	1½	inch	pipe	Each,	\$ 6	70
Inuram.	3816—"	"	"	"	"	C tubing	"	6	20
Inurgeam.	3818— 9	"	"	"	"	pipe	"	7	00
Inurgendam.	3819—"	"	"	"	"	C tubing	"	6	40
Armandus.	6416—10	"	"	"	"	pipe	"	7	20
Armatibus.	6417—''	"	"	"	"	C tubing	"	6	60
Invadebam.	<b>3824</b> — 8	"	"	2	"	pipe	"	7	70
${\it Invalendam.}$	3825—"	"	"	"	"	C tubing	"	7	00
Invaseram.	3827— 9	"	"	"	"	pipe	"	8	00
Inveham.	3828—"	"	"	"	"	C tubing	"	7	30
Armatus.	641810	"	"	"	"	pipe	"	8	40
Armemus.	6419 ''	"	"	"	"	C tubing	"	7	60

The Bracket lengths as listed are the distances from the pole to the outer end of the horizontal arm, but not including the projecting end casting.

# Double Bracket, For Iron Poles, Style B.

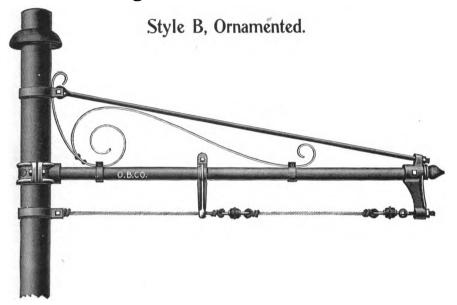


CODE WORD.	NO.								
Inventuram.	3833 — 8	Foot	Arm,	1½	inch	pipe	Each,	<b>\$12</b>	00
Invergam.	3834—"	. "	"	"	"	C tubing	"	11	00
Inverteram.	3836 9	"	"	"	"	pipe	"	12	<b>50</b>
Investiam.	3837— ''	"	"	"	"	C tubing	"	11	<b>40</b>
Arrecturus.	6420 - 10	"	"	"	"	pipe	"	13	00
Arrepimus.	6421—"	"	4.6	"	66	C tubing	"	11	80
Invisuram.	3842 8	"	. 44	2	"	pipe	"	12	10
Invit and am.	3843 ''	"	"	"	"	C tubing	"	12	70
Invocabam.	3845 9	"	"	"	"	pipe	"	14	70
Involandam.	3846 "	"	"	"	"	C tubing	"	13	30
Arrisurus.	6422 - 10	"	"	"	"	pipe	"	15	<b>30</b>
Arrogandus.	6423— ''	"	"	"	"	C tubing	"	13	80

The Bracket lengths as listed are the distances from the pole to the outer end of the horizontal arm, but not including the projecting end casting.



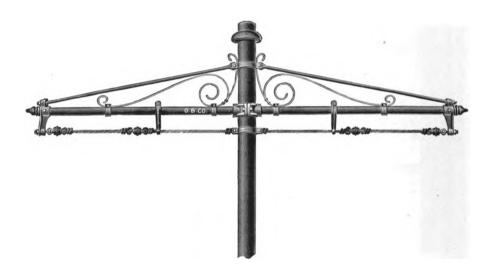
#### Single Bracket, For Iron Poles,



CODE WORD.	NO.								
Invulgatam.	3851- 8	Foot	Arm,	1½	inch	pipe	Each,	<b>\$</b> 9	00
Irac undam.	3852—"	"	"	"	"	C tubing	"	8	10
Irrugandam.	3854—9	"	"	"	"	pipe	"	9	40
Is maricam.	3855—"	"	"	"	"	C tubing	"	8	<b>40</b>
Arrogatus.	6424 - 10	"	"	"	"	pipe	"	9	80
Arrogemus.	6425— ''	"	"	"	"	C tubing	"	8	70
It it and am.	<b>3860</b> — 8	"	"	2	"	pipe	"	10	50
Jacitam.	3861—"	"	"	"	"	C tubing	"	9	30
Jactandam.	<b>3863</b> — 9	"	"	"	"	pipe	"	11	00
Jaculandam.	3864 "	"	"	"	"	C tubing	"	9	70
Arsibus.	642610	"	"	"	"	pipe	"	11	50
Artiremus.	6427 ''	"	. "	"	"	C tubing	"	10	10

The Bracket lengths as listed are the distances from the pole to the outer end of the horizontal arm, but not including the projecting end casting.

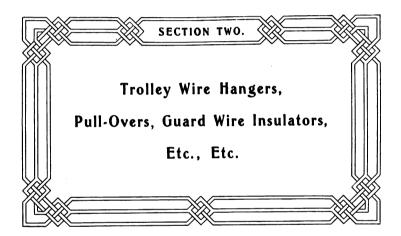
# Double Bracket, For Iron Poles, Style' B, Ornamented.



CODE WORD.	NO.								
Jocaturam.	3869— 8	Foot	Arm,	1½	inch	pipe	Each,	<b>\$</b> 16	20
Jocaveram.	3870- "	44	"	"	"	C tubing		14	<b>40</b>
Jubilabam.	3872-9	"	"	"	"	pipe	"	17	10
Jucundabam.	3873— ''	"	"	"	"	C tubing	"	15	00
Artiturus.	6428 - 10	"	"	"	"	pipe	"	18	00
Artivimus.	6429"	"	"	"	66	C tubing	"	15	60
Jugulabam.	3878— 8	"	"	2	"	pipe	66	18	80
Julianam.	3879 ''	"	"	"	"	C tubing	"	16	40
Jungebam.	3881 9	"	"	"	"	pipe	"	19	90
Jurgandam.	3882 "	"	"	"	"	C tubing	"	17	<b>3</b> 0
Aruntibus.	6430 - 10	"	"	"	"	pipe	"	21	00
Arvilibus.	6431—"	"	"	"	"	C tubing	"	18	20

The Bracket lengths as listed are the distances from the pole to the outer end of the horizontal arm, but not including the projecting end casting.







# Dirigo Insulation.





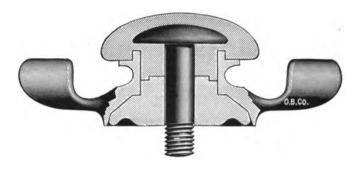
HE perfection of an Insulating Compound, possessing all the requisite properties and qualities which a material of this kind should have to make it suitable for use as an insu-

lation in combination with trolley and feeder wire appliances, has been realized in the DIRIGO INSULATION as now produced.

To bring about this result has required elaborate and extended experiments with a great variety of substances, the most careful and exhaustive observations of the practical uses and attending results of insulating substances, and the installation of the necessary machinery to manufacture, a large part of which was especially designed for this particular work; in brief, no means have been left unemployed to bring this material to the high degree of excellence attained.

DIRIGO INSULATION has extraordinary tensile strength and offers great resistance to a crushing strain. It is tough, elastic, uninflammable and moisture proof, possessing also extremely high non-conductive properties; in short, it has all those features which an insulating material intended for use under similar conditions should have. Every genuine piece of this Insulation is stamped with the word "DIRIGO" either separately or in conjunction with our trade mark (as shown at the top of this page), which is a guarantee of its electrical and mechanical perfection.

## Type W Trolley Wire Hangers.



THE electrical and mechanical construction of these Hangers has been worked out to a high degree of perfection. The Hanger Bodies are made from the best malleable iron castings, giving strength with lightness.

THE Insulator Caps and Washers dovetail together, also into the Hanger Body, thus minimizing the surface leakage. The Stud Bolt is made of a one-piece steel forging, over which the Hanger Cap is moulded. The enlarged head of the Stud Bolt is of greater diameter than the central opening in the Hanger Body, so that the danger of the trolley wire dropping to the ground if the insulation should be accidentally broken, is entirely done away with.

THE Insulator Lock Washer, illustrated on the opposite page in combination with a Straight Line Hanger Body and Ear, differs only from the regular Plain Type W Washer in the addition of a locking device. This consists of a split iron washer which is seated in a recess provided for it in the Insulator Washer and which finds bearing on its upper face against a flat iron disk moulded into the insulation, and on its lower face against the top of the boss of the ear or clamp with which the Hanger Body is used. This arrangement automatically locks the several parts together when assembled in position for use, and effectually prevents the Insulator Cap or Stud from becoming loosened and thereby unthreading. The Insulator Caps and Lock Washers are made of Dirigo Insulation, and may be used interchangeably with the various forms of Type W Hangers listed on the following pages.

# Type W Trolley Wire Hangers.



#### With Insulator Lock Washer.

#### Patented.

CODE WORD.	NO.								EACH.
Abrosam.	2163 In	sulato	r Cap,		7 1 ह	inch	Stu	d	\$ 0 30
Abrumpam.	2164—	66	Washer,	Plain,	7	"	"		18
Cinerariam.	2118-	"	"	Lock,	7	"	"		20
Conclausam.	2165—	"	Cap,		1/2	"	"		30
Concludam.	2166	"	Washer,	Plain,	1/2	"	"		18
Cimoliam.	2116	"	46	Lock,	1/2	"	"		20
Concoquam.	2167—	"	Cap,		5/8	"	"		30
Concoxeram.	2168—	44	Washer,	Plain,	5/8	"	"	•••••	18
Cillendam.	2114—	"	"	Lock,	5/8	"	"		20
Arvehendus.	6432—	"	Cap,	·	3/4	"	"		32
${m Ascaulibus}.$	6433-	"	Washer,	Plain,	3/4	"	"	•• • • • • • • • • • • • • • • • • • • •	18
Ascensibus.	6434—	"	"	Lock,				•••••	20

## Straight Line Hanger.

#### Type W.



CODE WORD.	NO.										EACH.	
Absentivam.	2173 -Str	aight l	Line H	anger,	5∕8	inch	Stud,	Plain	Washer	•••••	\$ 0 66	
Concubam.	2174—	"	"	"	<del>5/8</del>	"	"	Lock	"		68	
Ascia bamus.	6435	"	"	"	3⁄4	"	"	Plain	"		68	
Asciaremus.	6436—	"	"	"	3⁄4	"	"	Lock	"		70	,

See pages 150 to 193 for list of Trolley Ears and Clamps.



# Strain Hanger.

# Type W.



CODE WORD.  Juvatam.	NO. 3888—	Strain	Hanger,	5⁄8	inch	Stud,	Plain	Washer		EACH. \$ 0 79
Juvenescam.	3889	"	"	<del>5/8</del>	"	"	Lock	"		81
Asciaturus.	6437	"	"	3⁄4	"	"	Plain	"	• • • • • • • • • • • • • • • • • • • •	81
A sciavimus	6438	"	"	3/	"	"	Lock	"		84

# Barn Hanger.

# Type W.



CODE WORD.  Absilueram.		Barn H	langer,	5/8	inch	Stud,	Plain	Washer	 EACH. \$ 0 99
Concurvam.									
Ascitivus.	6439	"	"	¾	"	"	Plain	"	 1 01
Ascribimus	6440—	"	"	3/	"	"	Lock	46	 1 03

## Pipe Bracket Hanger.

### Type W.



CODE WORD.  Abstaveram.		Pipe Br	acket	Hanger,	5⁄8	inch	Stud,	Plain	Washer	· · · · · · · · · · · · · · · · · · ·	EACH.	
Condecoram.	2186	"	"	"	5∕8	"	"	Lock	"		1 16	6
As in a libus.	6441—	"	"	"	34	"	"	Plain	"		1 10	6
Aspectibus.	6442—	"	"	"	3⁄4	"	"	Lock	"		1 19	9

For  $1\frac{1}{4}$ ,  $1\frac{1}{2}$  and 2 inch pipe.



## Swiveled Pipe Bracket Hanger.

Single Insulation.

Type W.



CODE WORD.  Labaturam.	NO. 3894—I	Pipe	Bracket	Hanger,	<del>5/8</del>	inch	Stud,	Plain	Washer	·		сн. 36
Labaveram.	3895	"	"	"	5/8	"	"	Lock	"		1	. 38
Asperandus.	6443—	"	"	"	3⁄4	"	"	Plain	"		1	. 38
Asperatus.	6444—	"	"	"	3/4	"	"	Lock	"		1	41

For  $1\frac{1}{4}$ ,  $1\frac{1}{2}$  and 2 inch pipe.



# Swiveled Pipe Bracket Hanger.

Double Insulation.

Type W.



CODE WORD.  Lacerabam.	NO. 3900	Pipe	Bracket	Hanger,	<del>5/8</del>	inch	Stud,	Plain	Washer	·		сн. 72
Lacernatam.	3901-	. "	"	"	<del>5/8</del>	"	"	Lock	. "		1	74
Aspidibus.	6445—	. "	46	"	3⁄4	"	"	Plain	"		1	74
Asportamus.	6446 -	. "	"	"	3/4	"	"	Lock	"		1	76

For 1¼, 1½ and 2 inch pipe.



# Single Curve Hanger.

Type W.



CODE WORD.	NO.										EACH.
Abstule bam.	2197—S	ingle	Curve	Hanger,	<del>≸</del> 8	inch	Stud,	Plain	Washer	• • • • • • • • • • • • • • • • • • • •	<b>\$</b> 0 <b>6</b> 8
Condiscam.	2198—	"	"	"	5∕8	"	"	Lock	"	.·····	70
Aspuendus.	6447—	"	"	"	3∕4	"	"	Plain	"	• • • • • •	70
Assaturus.	6448	"	"	"	3/4	"	"	Lock	"		72

# Double Curve Hanger.

# Type W.



CODE WORD.  Abundabam.	NO. 2203—D	ouble	Curve	Hanger,	<del>5∕8</del>	inch	Stud,	Plain	Washer	· · · · · · · · · ·	EACH. \$ 0 77
Condoctam.	2204—	"	"	"	5∕8	"	"	Lock	"		79
Assedimus.	6449—	"	"	"	3⁄4	"	"	Plain	"		79
Asserturus.	6450	"	"	"	3⁄4	"	"	Lock	"		81

### Twin Straight Line Hanger.

Type W.



FOR the suspension of two parallel trolley wires over a single track, the Type W Twin Hangers will be found very desirable. As the above illustration shows, this style of Hanger is a modification of the Straight Line for single suspension on page 64 only in so far as to adapt it to carry two wires in parallel 6 inches apart. By the use of these Hangers the necessity of having overhead frogs at turnouts and switches is largely, if not altogether, done away with.

CODE WORD.	NO.									EACH.	
Lactebam.	3906—St	raight	Line	Hanger,	5∕8	inch	Studs,	Plain	Washers	 	
Lactescam.	39 <del>0</del> 7—	"	"	"	5∕8	"	"	Lock	"	 1 40	)
Asservitus.	6451—	"	"	"	3⁄4	"	"	Plain	"	 1 40	)
Assiduamus.	6452—	"	"	"	3/4	"	"	Lock	"	 1 45	,

### Twin Single Curve Hanger.

Type W.

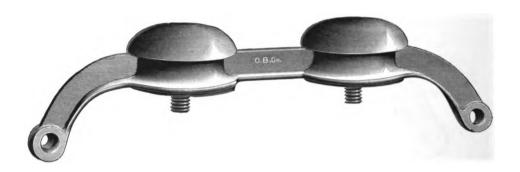


THE Single Curve Suspension form of the Type W Twin Hangers is of the same general design and intended for the same purposes as the regular Type W Single Curve Hanger listed on page 70. It provides, however, for supporting and insulating two parallel trolley wires; allowing a separation of 6 inches between them.

CODE WORD.  Laedebam.	NO. 3912—S	ingle	Curve	Hanger,	5⁄8	inch	Studs,	Plain	Washe	rs	EACH.	
Laetabam.	3913—	"	"	"	5∕8	"	"	Lock	"	••••	1 54	Ļ
Assignamus.	6453—	"	"	"	3⁄4	"	"	Plain	"		1 54	Ļ
Assitus.	6454	"	"	44	3⁄4	"	"	Lock	"		1 58	3

### Twin Double Curve Hanger.

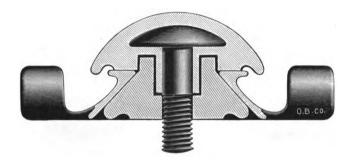
#### Type W.



THE Type W Twin Double Curve Hanger allows for a clearance of 6 inches between the two trolley wires, and is in every respect in duplicate of the Single Curve Hanger on the preceding page, with the exception of having two side suspension arms instead of one.

CODE WORD.  Lamberabam.		ouble	Curve	Hanger,	5⁄8	inch	Studs,	Plain	Washer	<b>s</b> .	EACH. \$ 1 54	
Lambitabam.	3919 —	"	"	"	<del>5</del> ⁄8	"	"	Lock	"		1 58	
As solandus.	6455		"	"	3⁄4	"	"	Plain	"		1 58	
Assolatus.	6456	"	"	"	3⁄4	"	"	Lock	"		1 62	

#### Type G Trolley Wire Hangers.



THE Type G Hangers listed on the succeeding pages somewhat resemble the corresponding Type W forms shown on pages 64 to 74, but differ from the latter in the detailed construction of their several parts. They are made of malleable iron castings, giving maximum strength combined with lightness in weight.

THE Insulator Caps and Washers, which are of the cap and cone form, dovetail together, so that surface leakage between the stud bolt and the body casting is practically eliminated. These Caps and Washers are made of Dirigo Insulation, which in the Cap is moulded around the Stud Bolt. The latter is made with an enlarged head which is larger in diameter than the central opening in the hanger body, so that there is no possibility of the Stud Bolt pulling through the hanger casting even if the insulation should accidentally become broken.

THE Insulator Lock Washer illustrated on the following page in combination with a Straight Line Hanger Body and Ear, differs from the regular Plain Type G Washer only in the addition of a locking device. This consists of a split iron washer which is seated in a recess provided for it in the Insulator Washer, and has a bearing against a flat iron disk moulded into the insulation. The lower surface of the Iron Washer bears against the boss of the trolley ear, and when the latter is screwed firmly upon the stud bolt, securely locks it in position, preventing the Hanger Cap from jarring loose. The Type G Insulator Caps and Washers may be used interchangeably with all the various forms of Type G Hangers listed on the following pages.

## Type G Trolley Wire Hangers.



### With Insulator Lock Washer.

#### Patented.

CODE WORD.	NO.							EACH.
Relicuam.	5440—In	sulato	or Cap,	5∕8 i	inch	Stud	1	\$ 0 31
Religabam.	5441-	"	Washer, Plain,	5⁄8	"	"		20
Relinendam.	5442	"	" Lock,	5/8	"	"		22
Relisam.	5443	"	Cap,	3⁄4	"	"		32
Reluceam.	5444—	"	Washer, Plain,	34	"	"		19
Relucendam.	5445	"	" Lock.	3/4	"	"		20

# Straight Line Hanger.

Type G.



CODE WORD.	NO.										EACH.
Reluseram.	5446 St	raight I	Line Ha	anger,	5⁄8 i	nch S	Stud,	Plain	Washer	·	\$ 0 68
Remadebam.											
Remadueram.	5448—	"	"	"	34	"	"	Plain	"		70
Remanatam.	5449-	"	"	"	3/4	"	"	Lock	"		72

See pages 150 to 193 for list of Trolley Ears and Clamps.



# Strain Hanger.

## Type G.



CODE WORD.  Remandatam.		train Ha	anger,	5⁄8 i	nch	Stud,	Plain	Washer	 EACH. \$ 0 84
Remansam.	5451—	"	"	5⁄8	"	"	Lock	"	 86
Remeandam.	5452-	"	"	3⁄4	"	"	Plain	"	 86
Remeatam.	5453—	"	"	3/4	"	"	Lock	"	 88

# Barn Hanger.

Type G.



CODE WORD. Remissam.		anger,	5⁄8	inch	Stud,	Plain	Washer	 EACH. \$ 0 84
Remisturam.	5455—"	"	5∕8	"	"	Lock	"	 86
Remonebam.	5456—"	"	3⁄4	"	"	Plain	"	 86
Remordeam.	5457—''	"	3/4	46	"	Lock	"	 88

# Single Curve Hanger.

## Type G.



CODE WORD.  Renavandam.		Single	Curve	Hanger,	5/8	inch	Stud,	Plain	Washer	•	EACH. \$ 0 70
Renavatam.	5463—	. "	"	"	5/8	66	"	Lock	"		72
Renectam.	5464-	. "	"	"	3/4	"	"	Plain	"		72
Renectebam.	5465—	. "	"	"	3⁄4	"	"	Lock	"		74

# Double Curve Hanger.

Type G.



CODE WORD.  Renideam.	NO. 5466—D	ouble	Curve	Hanger,	5/8	inch	Stud,	Plain	Washer	 EACH. \$ 0 80
Renidendam.	5467—	"	"	"	5/8	"	"	Lock	"	 82
Renidueram.	5468	"	"	"	3/4	"	"	Plain	46	 82
Renisuram.	5469—	"	"	"	3⁄4	"	"	Lock	44	 84

## Pipe Bracket Hanger.

Type G.



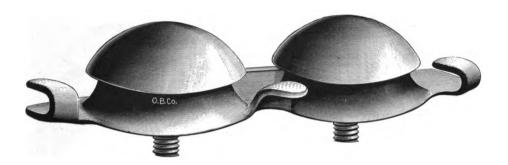
CODE WORD.	NO.									EA	CH.
Remorsuram.	5458—I	Pipe B	Bracket	Hanger,	<del>≸</del> 8	inch	Stud,	Plain	Washer	 \$ 1	. 36
Remulceam.	5459—	"	"	"	5∕8	"	"	Lock	"	 1	. 38
Remundatam.	<b>5460</b> —	"	4.6	"	3⁄4	"	"	Plain	"	 1	38
Remurinam.	5461—	"	"	"	3⁄4	"	"	Lock	"	 1	40

For 11/4, 11/2 and 2 inch pipe.



#### Twin Straight Line Hanger.

Type G.

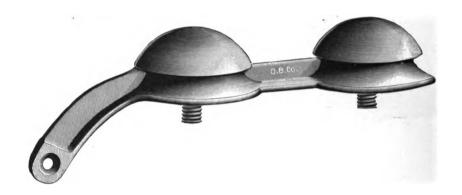


THE Type G Twin Straight Line Hanger is practically a double form of the corresponding regular Type G Hanger illustrated on page 77. It is intended for suspending two parallel trolley wires over a single track, thus avoiding the necessity of using overhead frogs at the turnouts and switches. A separation of 6 inches is provided between the trolley wires.

CODE WORD.	NO.										EACH.	
Renixam.	5470-	Straight	Line	Hanger,	5∕8	inch	Studs,	Plain	Washer	s	\$ 1 36	i
Renodabam.	5471-	_ "	"	"	5/8	"	"	Lock	"		1 40	)
Renoscebam.	5472-	_ "	"	"	3⁄4	"	"	Plain	"		1 40	ŀ
Renoveram.	5473-	"	"	"	3/4	"	"	Lock	66		1 45	

### Twin Single Curve Hanger.

#### Type G.

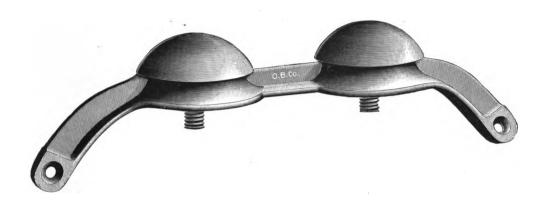


THE above illustration shows the Single Curve form of Type G Twin Hanger, which corresponds to the regular Type G Single Curve Hanger listed on page 80. It is intended, however, for supporting and insulating two parallel trolley wires, and maintaining them at a distance of 6 inches apart.

CODE WORD.	No.									EACH.
Renubam.	5474—	Single	Curve	Hanger,	5∕8	inch	Studs,	Plain	Washers	 \$ 1 50
Renubebam.	5475-	"	"	"	5∕8	"	46	Lock	"	 1 54
Renudandam.	5476	"	"	"	3⁄4	"	"	Plain	"	 1 54
Renudatam.	5477—	"	"	"	3⁄4	"	"	Lock	"	 1 58

#### Twin Double Curve Hanger.

Type G.

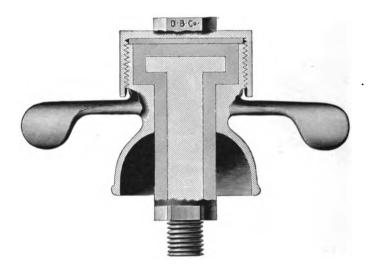


THE Type G Twin Double Curve Hanger illustrated above is in duplicate in every respect of the Single Curve Hanger on the preceding page, with the exception of having two side suspension arms instead of one. The distance between center to center of stud bolts is 6 inches.

CODE WORD.	NO.									EACH.
Renuendam.	5478—Do	ouble	Curve	Hanger,	5∕8	inch	Studs,	Plain	Washers	 \$ 1 54
Renueram.	5479—	"	"	"	5∕8	"	"	Lock	"	 1 58
Renuptam.	5480—	"	"	"	3⁄4	"	"	Plain	"	 1 58
Repandam.	5481—	"	"	"	3⁄4	"	"	Lock	"	 1 62

## Type D Trolley Wire Hangers.

#### Patented.



THE accompanying illustration shows a sectional view in part of a Type D Straight Line Hanger, which, in conjunction with a variety of other forms, is listed on the pages immediately following.

In this type of hanger many improvements have been embodied, which have resulted in bringing it to a degree of perfection never before equaled in this class of material. The particular features which appeal strongest to the users of this type of hanger are the Hexagonal Nuts on the Insulated Bolt and Hanger Cap, which, being of the same diameter, permit using one size of wrench interchangeably on them; and the row of Lugs around the lower edge of the Cap.

The Lugs serve as a means of holding the Cap securely in position on the Hanger, which result is obtained by bending some of the Lugs, preferably any two which are opposite each other, under the shoulder formed on the hanger body beneath the threaded part and tightly against it, thus preventing the Cap from unscrewing and backing off.

#### Insulated Bolts.







Type D-W.

THE two styles of Insulated Bolts which are illustrated above, and designated respectively as the Types D and D-W, can be used interchangeably with the different forms of Type D Trolley Wire Hangers. These are in duplicate of each other, except that their projecting metal ends are made differently, being of such a design as to permit attaching the corresponding types of ears and clamps to them. Both of these styles of Bolts are provided with an hexagonal nut at the bottom of the insulation for the Type D Hanger Wrench.

The Type D Bolt is threaded externally on the end, and can be used with all the various styles of ears and clamps that are provided with the usual form of boss tapped for corresponding sizes of studs.

The end of the Type D-W Bolt is cone shaped, and threaded internally to receive the stud bolt with which the Type D-W Trolley Clamp is equipped.

CODE WORD.  Barriebam.		sulate	d Bolt,	Тур	e D,	5% i	nch	Stud	1	EACH. \$ 0 40
Assuendus.	6457	"	"	"	D,	3/4	"	"	•••••	40
Barrituram.	2019—	"	46	"	D-V	v		<b></b>	• • • • • • • • • • • • • • • • • • • •	40

## Type D Hanger Wrench.



THE length of the Type D Hanger Wrench is 7¾ inches. It is drop forged of steel, and formed with an opening in one end, which is of the proper size to fit interchangeably the hexagonal nuts on the various types of Insulated Bolts, Hanger Caps, etc.

These are furnished with the Types D and M Hangers, free of charge.

CODE WORD.	NO.	EACH.
Barriveram.	2020—Hanger Wrench.	\$ 0 44

## Straight Line Hanger.

#### Patented.

#### Type D.



CODE WORD.  Basellam.	NO. 2021—St	raigh	t Line H	ang	ger, B	ronze	Metal	l, D I	Bolt,	, ¾ in.	Stud	EACH. \$ 1 32	
Assurgimus.	6459—	"	"	"		"	"	D	"	34 "	"	1 32	
Lamellam.	3920—	"	"	"		"	" ]	D-W	"			1 32	
Basia bam.	2022—	"	"	"	Mall.	Iron,	Galv.	, D	"	⅓ in.	Stud	77	
Astensibus.	6460	"	"	"	"	"	"	D	"	34 ''	"	77	
Laminam.	3921	"	"	"	"	"	"	D-W	"			77	
${\it Basiaturam}.$	2023	"	"	"	"	"	Jap.	, D	"	5% in.	Stud	72	
Asteriscus.	6461	"	"	"	44	"	"	D	"	3/4 ''	"	72	
Lampadiam.	3922-	"	"	"	"	"	"	D-W				72	

See pages 150 to 193 for list of Trolley Ears and Clamps.



# Strain Hanger.

#### Patented.

### Type D.



CODE WORD.  Lanugineam.	no. 3935—S	train Ha	anger,	Bronze	Metal,	D Bo	lt, ¾ in	. Stud	EACH. \$ 1 87
Asternimus.	6462—	"	"	"	"	D "	34 "	"	1 87
Lanuvinam.	3936—	"	"	"	" I	D- <b>W</b> '	·		1 87
Lapidabam.	3937	"	" M	all. Iron	, Galv.,	, D "	' ⅓ in	. Stud	1 10
Asticus.	6463-	44	66		"	D '	· 3/4 · ·	"	1 10
Lapides cam.	3938	"	"		" ]	D- <b>w</b> '	·	• • • • • • • • • • • • • • • • • • • •	1 10
Lapituram.	3939	"	66		Jap.,	D "	' ⅓ in	. Stud	1 06
Astitimus.	6464	44	"		"	D '	34 "	"	1 06
Lapiveram.	3940	"	"	"	" ]	D-W'	<b></b>		1 06

# Bridge Hanger.

#### Patented.

## Type D.



CODE WORD.  Beluosam.	NO. 2036—B	ridge H	ange	er, Bi	onze	Metal,	, D	Bolt,	, 5% in. Stud	EACH. \$ 1 83
A stralibus.	6465—	"	"		"	"	D	"	34 " "	1 83
Lapsabam.	3941—	"	"		"	"	D-W	"		1 83
Bendedicam.	2037—	"	" 1	Mall.	Iron,	Galv.	, D	"	5% in. Stud	79
Astruendus.	6466—	"	"	"	"	"	D	"	34 " "	79
Laps a turam.	3942—	"	"	"	"	44	D-W	"	• · · · · · · · · · · · · · · · · · · ·	79
Benefaciam.	2038	44	"	"	"	Jap.,	D	"	5% in. Stud	74
Astruximus.	6467—	"	"	"	"	"	D	"	34 " "	74
Lapsaveram.	3943	"	"	"		"	D-W	"	• • • • • • • • • • • • • • • • • • • •	74

### Barn Hanger.

#### Type D.



THIS style of Hanger is particularly adapted for use where economy of space in height is necessary, as the hanger body casting is only 2% inches high. It is similar in design to the Bridge Hanger, as shown on page 91, except that it is not provided with the metal cap.

CODE WORD.  Astupendus.	NO. 6468 - E	Barn	Hanger,	, Bronze	Metal	, D	Bolt,	⅓ in.	Stud	 EACH. \$ 0 99
A sturibus.	6469—	"	"	44	"	D	46	34 "	"	 99
Atellanius.	6470—	"	"	"	"	D-W	44	· • • • •		 99
At in a t i b u s.	6471—	"	" M	all. Iron,	Galv.	, D	"	5% in.	Stud	 62
Atinius.	6472-	"	"		66	D	"	3/4 ''	"	 62
A tratus.	6473—	"	"	"		D-W	"	• • • •		 62
Attentamus.	6474—	"	"		Jap.,	D	"	5% in.	Stud	 58
Attenturus.	6475—	"	44		"	D	"	3/4 "	"	 58
Attenuatus.	6476-	"	66		"	D-W	"			 58

## Ceiling Hanger.

Type D.



THE Ceiling Hanger is suitable for suspensions where too much moisture is not present, as for example, car barns and mines when the conditions are favorable.

CODE WORD.  Attestatus.	NO.	ailino	Hanger	Bronze	Metal	а	Rolt	5.6	in	Stud	EACH. \$ 0.79
manual de la constantia	0411 00	JIIII B	manger,	Dionac	MIC UMI,	, D	<b>D</b> 010,	/0	1110	Duu	Ψ υ .υ
Attexendus.	6478—	"	"	"	"		"	3⁄4	"	"	79
Attexturus.	6479—	"	"	"	"	$\mathbf{D}\text{-}\mathbf{W}$	"		<b></b>		79
Attexuimus.	6480—	"	" M	Iall. Iron,	Galv.	, D	"	5∕8	in.	Stud	55
Attinendus.	6481—	"	"	"	"	D	"	¾	"	"	55
Attinuimus.	6482—	"	"	" "	"	D-W	"		٠٠ ٠٠		55
Attollimus.	6483—	"	46 -	" "	Jap.,	D	"	5∕8	in.	Stud	52
Attonsus.	6484—	"	"	" "	"	D	"	3⁄4	"	"	52
Attorturus.	6485	"	"	"	"	D-W	"	• • •			52



## Swiveled Pipe Bracket Hanger.

#### Patented.

Single Insulation.

Type D.



CODE WORD.	NO.	EACH.
Baubaturam.	2028—Pipe Bracket Hanger, Malleable Iron, Galvanized, D Bolt, % inch Stud	<b>\$</b> 1 32
Attrivius.	6487—Pipe Bracket Hanger, Malleable Iron, Galvanized, D Bolt, ¾ inch Stud	1 32
Laniaturam.	3930—Pipe Bracket Hanger, Malleable Iron, Galvanized, D-W Bolt	1 32
Beabam.	2029—Pipe Bracket Hanger, Malleable Iron, Japanned, D Bolt, 56 inch Stud	1 28
Aucebamus.	6488—Pipe Bracket Hanger, Malleable Iron, Japanned, D Bolt, ¾ inch Stud	1 28
Laniaveram.	3931—Pipe Bracket Hanger, Malleable Iron, Japanned, D-W Bolt	1 28

For 11/4, 11/2 and 2 inch pipe.



## Swiveled Pipe Bracket Hanger.

Patented.

Double Insulation.

Type D.



CODE WORD.	NO.	EACH.
Beaveram.	2031—Pipe Bracket Hanger, Malleable Iron, Galvanized, D Bolt, % inch Stud	\$ 1 65
Auctabimus.	6490—Pipe Bracket Hanger, Malleable Iron, Galvanized, D Bolt, ¾ inch Stud	1 65
Lanificam.	3933—Pipe Bracket Hanger, Malleable Iron, Galvanized, D-W Bolt	1 65
Bellatam.	2032—Pipe Bracket Hanger, Malleable Iron, Japanned, D Bolt, 1/4 inch Stud.	1 60
Auctandus.	6491—Pipe Bracket Hanger, Malleable Iron, Japanned,	
Lanitiam.	D Bolt, ¾ inch Stud	1 60
	D-W Bolt	1 60

For 14, 14 and 2 inch pipe.



## Pipe Bracket Hanger.

#### Patented.

#### Type D.



CODE WORD.	NO.	EACH.
Batiolam.	2025—Pipe Bracket Hanger, Malleable Iron, Galvanized, D Bolt, % inch Stud	<b>\$</b> 1 21
Auctitamus.	6493—Pipe Bracket Hanger, Malleable Iron, Galvanized, D Bolt, ¾ inch Stud	1 21
Lancinabam.	3924—Pipe Bracket Hanger, Malleable Iron, Galvanized, D-W Bolt	1 21
Batuam.	2026—Pipe Bracket Hanger, Malleable Iron, Japanned,	
Auctoramus.	D Bolt, % inch Stud	1 14
Lanciolam.	D Bolt, ¾ inch Stud	1 14
	D-W Bolt	1,14

For 11/4, 11/2 and 2 inch pipe.



# Single Curve Hanger.

#### **Patented**

## Type D.

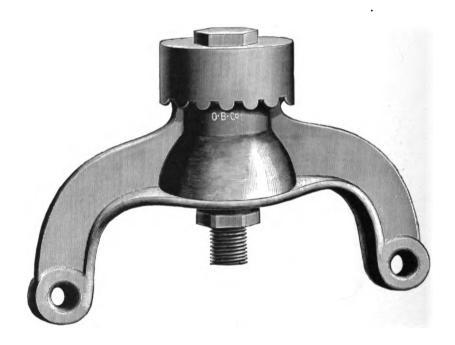


					•											
CODE WORD.  Betendam.	NO. 2044—S	ingle	e Curve	Hang	er, Bı	onze	Metal,	D	Bolt,	<del>5/8</del>	in.	Stud	ι		сн. 54	
Aucupibus.	6495—	"	"	"		"	44	D	"	34	"	"		1	54	
Bifariam.	2045—	"	"	"	Mall.	Iron,	Galv.,	D	"	5∕8	"	"			84	
Audimus.	6496—	"	"	"	"	"	"	D	"	3⁄4	"	"			84	
Bimulam.	2046—	"	"	"	"	"	Jap.,	D	"	5∕8	"	"			79	
Audiremus.	6497—	"	"	"	. "	"	66	D	44	3/	"	"			79	

# Double Curve Hanger.

#### Patented.

## Type D.



CODE WORD.  Bisextam.	NO. 2047—D	ouble	Curve I	Hang	ger, B	ronze	Metal	, D	Bolt,	5∕8	in.	Stud	i		сн. <b>02</b>	
Auditamus.	6498—	44	"	"		"	"	D	"	34	"	"		2	02	
Bisulcam.	2048—	"	"	"	Mall.	Iron,	Galv.,	D	"	<b>¾</b>	"	**			92	
Auditurus.	6499	"	"	"	"	"	"	D	"	3⁄4	"	"			92	
Bisyllabam.	2049—	"	"	"	"	"	Jap.,	D	"	5∕8	"	"			88	
Audivimus.	6500	"	"	"	"	"	"	D	"	3/	"	44			88	

## Single Curve Hanger.

#### Patented.

#### Type D=8.



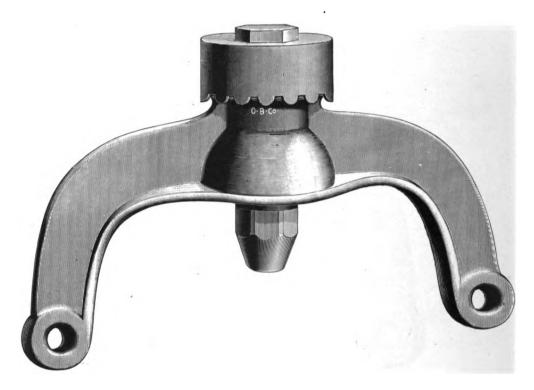
In this Hanger the height of the suspension arm is greater than in the regular Type D Single Curve, so that it may be used to advantage with ears or clamps having an extra high boss, or with the standard sizes of such in combination with the Figure 8 and other similar forms of trolley wires.

CODE WORD. Bituricam.	NO. 2050-	-Single	Curve	Hanger,	Mall.	Iron,	Galv., D Bolt,		EACH. 5 0 99
Auferendus.	6501-	_ "	"	"	"	"	" D "	34 " "	99
Larvabam.	3950-	_ "	"	46	66	"	" D-W"		99
Biviam.	2051-	_ "	"	"	"	"	Jap., D "	5% in. Stud	94
Aufidianus.	6502-	_ "	44	"	"	"	" D "	34 " "	94
Larvaturam.	3951-	_ "	66	44	"	66	" D-W"		94

## Double Curve Hanger.

Patented.

### Type D-8.



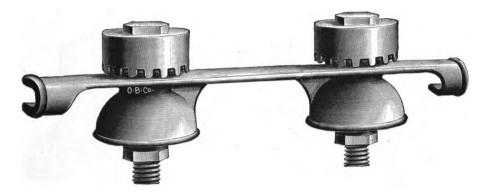
THE Type D-8 Double Curve Hanger is similar to the Single Curve, shown on the preceding page, except that it is provided with two suspension arms.

CODE WORD.  Blandam.	NO.	Jouble	Cuma	Uangon	Mall	Iman	Colu. D.I	201+	5/ in		EACH.
				0 /		,	•	•	, -		
Aufugimus.											
							" D-W				
Blandulam.	2053—	"	. "	44	"	"	Jap., D	"	⅓ in.	Stud	1 06
Augendus.	6504	**	"	66	44	"	" D	"	34 "	"	1 06
Lateranam.	3953—	"	"	"	"	"	" D-W	"			1 06

## Twin Straight Line Hanger.

#### Patented.

#### Type D.



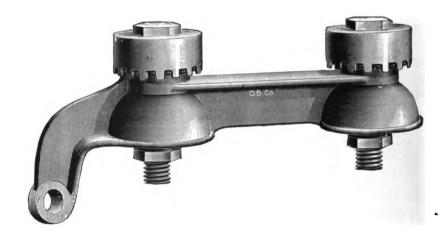
THE Twin Hangers illustrated on the following pages are designed primarily for use on single track electric roads where two parallel trolley wires are used to avoid the necessity of overhead frogs and switches. These Hangers are practically in duplicate of the regular forms of the Types D and D-8 Hangers shown on page 89, also pages 97 to 100, with the exception of being double. They embody all the characteristics peculiar to the regular Type D Hangers, such as the "Clinch Cap" and the Hexagonal Nuts on the insulated bolt and hanger cap. The distance from center to center of insulated bolts is 6 inches.

CODE WORD.	NO.	EACH.
Fundaveram.	3184—Straight Line Hanger, Bronze Metal,	
	D Bolts, % inch Studs	\$ 3 52
Auguramus.	6505—Straight Line Hanger, Bronze Metal,	
•	D Bolts, ¾ inch Studs	3 52
Latinabam.	3954—Straight Line Hanger, Bronze Metal,	
	Ď-W Bolts	3 52
Funditabam.	3185—Straight Line Hanger, Malleable Iron, Galvanized,	
	D Bolts, % inch Studs	1 76
Auloedus.	6506 - Straight Line Hanger, Malleable Iron, Galvanized,	
	D Bolts, ¾ inch Studs	1 76
Latitandam.	3955—Straight Line Hanger, Malleable Iron, Galvanized,	
	D-W Bolts	1 76
Funerabam.	3186—Straight Line Hanger, Malleable Iron, Japanned,	
	D Bolts, 5% inch Studs	1 67
Auraturus.	6507—Straight Line Hanger, Malleable Iron, Japanned,	
	D Bolts, ¾ inch Studs	1 67
${\it Latitotam}.$	3956—Straight Line Hanger, Malleable Iron, Japanned,	
	Ď-W Bolts	1 67

## Twin Single Curve Hanger.

#### Patented.

#### Type D.



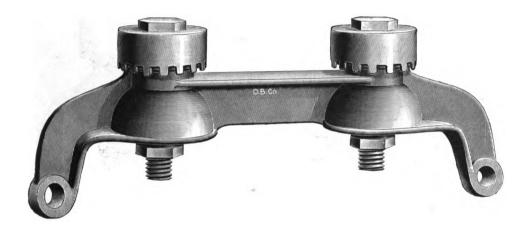
THE Twin Single Curve Hanger here shown corresponds to the regular Type D Single Curve illustrated on page 97. As in the Straight Line Hanger on the preceding page, the distance from center to center of stud bolts is 6 inches.

CODE WORD.	NO.	EACH.
Fungidam.	3187—Single Curve Hanger, Bronze Metal,	
	D Bolts, 5% inch Studs	\$ 3 78
Aureolus.	6508—Single Curve Hanger, Bronze Metal,	•
	D Bolts, ¾ inch Studs	3 78
Furcam.	3188-Single Curve Hanger, Malleable Iron, Galvanized,	
	D Bolts, ¾ inch Studs	1 80
Auribus.	6509-Single Curve Hanger, Malleable Iron, Galvanized,	
	D Bolts, ¾ inch Studs	1 80
Furciferam.	3189—Single Curve Hanger, Malleable Iron, Japanned,	
•	D Bolts, % inch Studs	1 72
Aurigamus.	6510—Single Curve Hanger, Malleable Iron, Japanned,	
•	D Bolts, ¾ inch Studs	1 72
	· · · · · · · · · · · · · · · · · · ·	

## Twin Double Curve Hanger.

Patented.

## Type D.



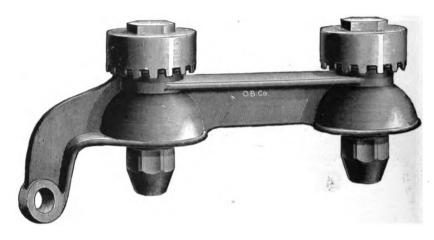
THIS Hanger is in duplicate of the Single Curve Hanger shown on the opposite page with the addition of a second side supporting arm. The separation of the trolley wires in this Hanger is 6 inches.

CODE WORD.	NO.	EACH.
Furculam.	3190—Double Curve Hanger, Bronze Metal,	
	D Bolts, % inch Studs	\$ 3 96
Auseramus.	6511—Double Curve Hanger, Bronze Metal,	
	D Bolts, ¾ inch Studs	3 96
Furiaturam.	3191—Double Curve Hanger, Malleable Iron, Galvanized,	
	D Bolts, ¾ inch Studs	1 84
Auspicamus.	6512—Double Curve Hanger, Malleable Iron, Galvanized,	
-	D Bolts, ¾ inch Studs	1 84
Furiaveram.	3192—Double Curve Hanger, Malleable Iron, Japanned,	
	D Bolts, 1/8 inch Studs	1 76
Autumamus.	6513—Double Curve Hanger, Malleable Iron, Japanned,	
	D Bolts, ¾ inch Studs	1 76

## Twin Single Curve Hanger.

#### Patented.

## Type D-8.



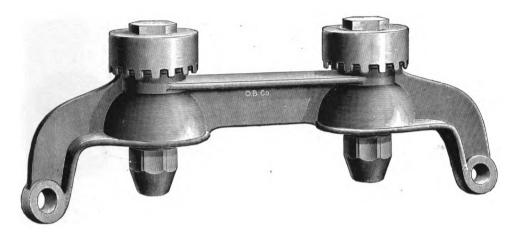
THE Type D-8 Twin Single Curve Hanger differs from the Type D Hanger illustrated on page 102 only in the suspension arm, which is made correspondingly longer, to adapt it to the same uses as the single form of the Type D-8 Curve Hanger. The separation of the trolley wires is 6 inches.

CODE WORD.	NO.	EACH.
Latoniam.	3957—Single Curve Hanger, Malleable Iron, Galvanized,	
	D Bolts, % inch Studs\$	1 84
Avecturus.	6514—Single Curve Hanger, Malleable Iron, Galvanized,	
	D Bolts, ¾ inch Studs	1 84
Latrabam.	3958—Single Curve Hanger, Malleable Iron, Galvanized,	
	D-W Bolts	1 84
Latraturam.	3959—Single Curve Hanger, Malleable Iron, Japanned,	
	D Bolts, % inch Studs	1 76
Avehendus.	6515Single Curve Hanger, Malleable Iron, Japanned,	
	D Bolts, ¾ inch Studs	1 76
Latraveram.	3960—Single Curve Hanger, Malleable Iron, Japanned,	
	D-W Bolts	1 76

## Twin Double Curve Hanger.

#### Patented.

## Type D=8.



THE Twin Double Curve Hanger illustrated above is in duplicate in every respect of the Single Curve Hanger on the opposite page, with the exception of having two side suspension arms instead of one. The distance from center to center of stud bolts is 6 inches.

CODE WORD.	NO.	EACH.
Laudandam.	3961—Double Curve Hanger, Malleable Iron, Galvanized,	
	D Bolts, % inch Studs	\$ 1 89
Avenarius.	6516—Double Curve Hanger, Malleable Iron, Galvanized,	
	D Bolts, ¾ inch Studs	1 89
Laudatam.	3962—Double Curve Hanger, Malleable Iron, Galvanized,	
	D-W Bolts	1 89
Laurentiam.	3963—Double Curve Hanger, Malleable Iron, Japanned,	
	D Bolts, 5% inch Studs	1 80
Avocatus.	6517—Double Curve Hanger, Malleable Iron, Japanned,	
	D Bolts, ¾ inch Studs	1 80
Lauriferam.	3964—Double Curve Hanger, Malleable Iron, Japanned,	
-	D-W Bolts	1 80

## Twin Strain Hanger.

Patented.

#### Type D.



THE Strain form of suspension illustrated above corresponds to the Twin Hangers described on pages 101 to 105 inclusive, and as its name indicates, is intended for use in anchoring two parallel trolley wires by means of guy wires secured through the corner holes of the Hanger. The separation between centers of stud bolts is 6 inches.

CODE WORD.	NO.									EACH.
Repigrabam.	5495—S	train	Hang	er, Bro	onze	Meta	ıl, DB	olts,	5% in. Studs	\$ 4 08
Replaudam.	5496	"	"	•	6	"	$\mathbf{D}$	"	34 " "	4 08
Repleturam.	5497	"	"	•	4	"	D-W	"		4 08
Repleveram.	<b>5498</b> —	"	"	Mall. I	ron,	Galv	., D	"	5/8 in. Studs	2 20
Replicabam.	5499	"	"	"	"	"	D	"	34 " "	2 20
Replictam.	5500—	"	"	"	"	"	D-W	"		2 20
Reponendam.	5501—	"	"	"	"	Jap.	., D	"	5% in. Studs	2 06
Reporrigam.	5502-	"		"	"	"	D	"	3/4 " "	2 06
Reportatam.	5503—	"	"	"	"	"	D-W	"		2 06

## Straight Line Hanger.

Patented.

Double Insulation.

Type D.



WITH the exception of the side suspension arms, this Hanger is in duplicate of the regular Type D form illustrated on page 89. It is designed especially for use on high voltage circuits, particularly those where the voltage exceeds 600, and is especially applicable to double trolley roads where it is desirable to interpose secondary insulation between the hangers. As the illustration above shows, each of the side arms of the Hanger is forked and provided with an insulating spool of Dirigo, Catalogue No. 4201, which forms the secondary insulation.

CODE WORD.	NO.	EACH.
Requiram.	5515—Straight Line Hanger, Malleable Iron, Galvanized, D Bolt, 1/2 inch Stud	\$ 1 60
Require bam.	5516—Straight Line Hanger, Malleable Iron, Galvanized, D Bolt, ¾ inch Stud	1 60
Resacratam.	5517—Straight Line Hanger, Malleable Iron, Galvanized, D-W Bolt	1 60
Resanabam.	5518—Straight Line Hanger, Malleable Iron, Japanned, D Bolt, ¼ inch Stud	1 56
Resanueram.	5519—Straight Line Hanger, Malleable Iron, Japanned, D Bolt, ¾ inch Stud	1 56
Resarciam.	5520—Straight Line Hanger, Malleable Iron, Japanned,	
	Ď-W Bolt	1 56

## Single Curve Hanger.

#### Patented.

#### Double Insulation.

## Type D.



THIS Hanger is an adaptation, for single curve suspension, of the Straight Line form described on the preceding page.

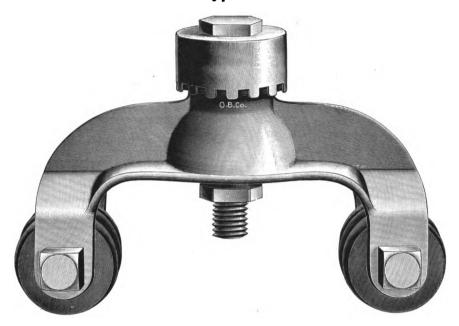
CODE WORD.	NO.	EACH.
Rescideram.	5523—Single Curve Hanger, Malleable Iron, Galvanized,	
	D Bolt, 5% inch Stud	\$ 1 60
Rescinam.	5524—Single Curve Hanger, Malleable Iron, Galvanized,	
	D Bolt, ¾ inch Stud	1 60
Resculptam.	5525—Single Curve Hanger, Malleable Iron, Galvanized,	
_	D-W Bolt	1 60
Resecabam.	5526Single Curve Hanger, Malleable Iron, Japanned,	
	D Bolt, % inch Stud	1 56
Resecutam.	5527—Single Curve Hanger, Malleable Iron, Japanned,	
	D Bolt, ¾ inch Stud	1 56
Resedandam.	5528—Single Curve Hanger, Malleable Iron, Japanned,	
	D-W Bolt	1 56

## Double Curve Hanger.

Patented.

Double Insulation.

Type D.



THE Double Curve Hanger illustrated above is in duplicate of the Single Curve previously described, with the addition of a second side suspension arm.

CODE WORD.	NO.	EACH.
Resignatam.	5531—Double Curve Hanger, Malleable Iron, Galvanized,	
	D Bolt, 1/8 inch Stud	\$ 2 00
Resolvam.	5532—Double Curve Hanger, Malleable Iron, Galvanized,	
	D Bolt, ¾ inch Stud	2 00
Respergam.	5533—Double Curve Hanger, Malleable Iron, Galvanized,	
	D-W Bolt	2 00
Respinabam.	5534-Double Curve Hanger, Malleable Iron, Japanned,	
	D Bolt, % inch Stud	1 95
Respiratam.	5535—Double Curve Hanger, Malleable Iron, Japanned,	
	D Bolt, ¾ inch Stud	1 95
Respondeam.	5536—Double Curve Hanger, Malleable Iron, Japanned,	
	D-W Bolt	1 95

## Type E Trolley Wire Hangers.

#### Patented.



Type E Insulated Bolt.

THE Type E Trolley Wire Hangers, several forms of which are illustrated on the succeeding pages, resemble very closely in their general design the corresponding forms of the Type D Hangers illustrated on pages 89, 97 and 98. They are, however, considerably larger in over-all dimensions, and correspondingly heavier and more substantial in construction than the Type D, being designed especially to meet unusually severe requirements in overhead line construction, particularly where great mechanical strength and a high degree of insulation are required.

These Hangers were primarily designed for the Washington, Baltimore and Annapolis Electric Railway, for supporting over a single track, two 4-0 trolley wires carrying 1,000 volts single phase alternating current. In this case the high line voltage employed, together with the high speed of the cars, presented conditions demanding the most substantial form of overhead construction, and the Type E Hangers were adopted as most perfectly fulfilling all the conditions and requirements. Two separate hangers are used in this instance, one for each trolley wire.

The Type E Insulated Bolt illustrated above may be used interchangeably with either the Type E Straight Line or Curve Hangers shown on the following pages; but on account of being larger than the Types D and M Bolts, it cannot be used in connection with either of

the latter types of hangers.

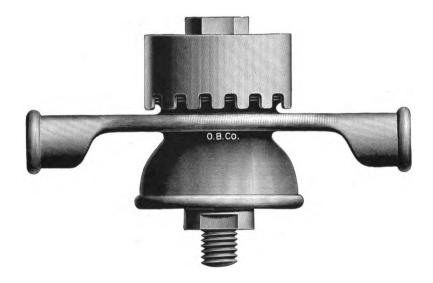
CODE WORD. NO. EACH.

Avocavimus. 6518—Insulated Bolt, Type E, ¾ inch Stud . . . . . . \$ 0 70

# Straight Line Hanger.

Patented.

## Type E.



CODE WORD.	NO.										E	EACH.	
Avocemus.	6519S	traight	Line	Hanger,	Mall.	Iron,	Galv.,	34	inch	Stud	\$	1 50	)
Avolabamus.	6520-	"	"	"	"	"	Jap.,	3/4	"	".		1 40	)

See pages 150 to 193 for list of Trolley Ears and Clamps.



# Single Curve Hanger.

#### Patented.

## Type E.



CODE WORD.	NO.									EA	CF	I.
Avolamus.	6521—S	ingle	Curve	Hanger,	Mall.	Iron,	Galv.,	¾ in.	. Stud.	 \$	1 6	0
Avolaremus.	6522—	"	"	"	66	66	Jap	3⁄4 "	"		1 5	60

# Double Curve Hanger.

Patented.

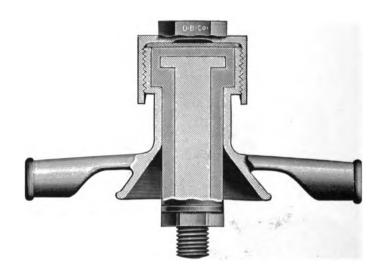
## Type E.



CODE WORD.	NO.											E	AC	H.
A volaturus.	6523—D	ouble	Curve	Hanger,	Mall.	Iron,	Galv.,	¾	in.	Stud	• • • •	\$	1	75
Avulsurus.	6524—	"	"	"	"	"	Jap	3/1	"	"			1	65

## Types M and M-8 Trolley Wire Hangers.

#### Patented.



THE Types M and M-8 Hangers, illustrated on the following several pages, resemble very closely the corresponding forms of the Type D Hangers, and are intended to be used under the same conditions. With these Hangers is interchangeably used the Type M Insulated Bolt appearing on the following page, which is of slightly different dimensions than those of the Type D Bolt, and for that reason the several pieces which go to make up the complete Types D and M Hangers are not interchangeable. Both the Types M and M-8 include the features which are present in the Type D Hangers of the clinching lugs and hexagonal nut on the Hanger Cap, and the latter also at the bottom of the Insulated Bolt.

The Type M-8 Curve Hangers are in duplicate of the Type M, with the exception of the suspension arms, which are longer and of greater spread, to give more clearance for the trolley wheel and harp, and to provide, as well, for bringing the eye in the suspension arm on a line with the trolley wire when the Hangers are used with ears or clamps having an extra high boss, or, on the other hand, with the standard sizes of these in combination with the Figure 8 and other similar forms of trolley wires.

#### Insulated Bolt.

### Type M.



THIS style of Insulated Bolt is of the proper size to make a perfect fit in the Type M Hangers. It is of the same design as the Type D Insulated Bolt illustrated and described on page 87, and is in duplicate as far as the hexagonal nut and threaded end are concerned, the former admitting the use of the Type D Hanger Wrench and the latter being either 5% or 34 of an inch in diameter. The other dimensions, however, vary from the Type D, thus preventing their being used interchangeably. The Type M Bolt will fit nearly all the different makes of the standard "West End" Type of Hangers now in use.

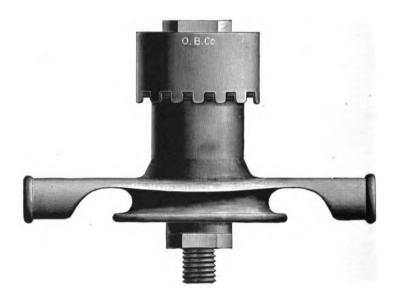
CODE WORD.	NO.									EACH.	
Blateratam.	2054—In	sulated	Bolt,	Туре	M,	5∕8	inch	Stud	١	\$ 0 40	)
Baburrus.	6528—	"	"	"	M,	3/4	"	"		40	)



## Straight Line Hanger.

#### Patented.

## Type M.



CODE WORD.	No.									EACH	
Frondeam.	3165—St	raight	Line	Hanger	, Bronze	Metal,	<b>5</b> ⁄8	inch	Stud	 \$ 1 58	8
Baccatus.	6530—	"	"	"	"	"	¾	"	"	 1 58	8
Fugaturam.	3166—	"	"	." M	Iall. Iron,	Galv.,	5/8	"	"	 7	7
Badizamus.	6531-	"	"	"	" "	"	¾	"	"	 7'	7
Fugaveram.	3167-	"	"	"	" "	Jap.,	5∕8	"	"	 72	2
Bajulamus.	6532—	"	"	"	"	"	3⁄4	"	"	 7:	2

See pages 150 to 193 for list of Trolley Ears and Clamps.

## Barn Hanger.

## Type M.



THE Type M Barn Hanger is equipped with the standard Type M Insulated Bolt, but economy in vertical height is obtained by omitting the usual cap on the top of the Hanger and placing the supporting arms on the body casting.

CODE WORD.	NO.								EACH.
Lenituram.	3984—I	3arn	Hanger	Bronze	e Metal,	5∕8	inch	Stud	 \$ 1 01
Balabamus.	6533—	"	"	"	46	34	"	"	 1 01
Leniveram.	3985—	"	" N	Iall. Iro	n, Galv.,	5/8	"	"	 66
Balandus.	6534—	"	"	" "	"	3⁄4	"	"	 66
Lentabam.	3986—	"	"	" "	Jap.,	5∕8	"	"	 62
Balantibus.	6535—	"	44	"	44	3/4	"	"	 62

## Swiveled Pipe Bracket Hanger.

Patented.

Single Insulation.

Type M.



CODE WORD.	NO.											EA	сн.
Lemniacam.	3979—I	Pipe	Bracket	Hanger,	Mall.	Iron,	Galv.,	<b>5</b> ⁄8	inch	Stud	• • •	\$ 1	32
Ballaremus.	6537	"	"	"	"	"	"	34	"	44		1	32
Lenandam.	3980	"	"	"	"	44	Jap.,	5∕8	"	"	•••	1	28
Ballaturus.	6538	"	44	"	"	"	"	34	"	"		1	28

For 11/4, 11/2 and 2 inch pipe.

In ordering Hangers state the size of pipe they are to be used with.

## Swiveled Pipe Bracket Hanger.

Patented.

Double Insulation.

Type M.



CODE WORD.	NO.									EACH	
Lemniam.	3982—Pipe	Bracket	Hanger,	Mall.	Iron,	Galv.,	5∕8	inch	Stud	\$ 1 6	5
Ballucibus.	6540—"	"	"	"	"	"	34	"	"	1 6	5
Lemniebam.	3983—"	44	"	"	"	Jap.,	5∕8	"	"	1 6	0
Balsaminus.	6541—"	"	66	"	"	44	34	"	" .,	1 6	0

For 11/4, 11/2 and 2 inch pipe.

In ordering Hangers state the size of pipe they are to be used with.



## Single Curve Hanger.

#### Patented.

## Type M.



CODE WORD. Fulciveram.	NO. 3170—S	lingle	Curve	Hang	er, B	ronze	Metal,	<del>5/8</del>	inch	Stud	l	EAC \$ 1		
Baltearius.	6542—	_		_									65	
Fulgebam.	3171—	<b></b> .	"	"	Mall.	Iron,	Galv.,	<del>5∕8</del>	"	"			84	
Baptizamus.	6543—	"	"	"	44	"	"	34	"	"			84	
Fulgescam.	3172—	"	"	"	"	**	Jap.,	5∕8	"	"			79	
Barbus.	6544	"	"	"	"	"	"	34	44	"			79	

# Double Curve Hanger.

Patented.

## Type M.



CODE WORD. Fulgurabam.	NO. 3173—Д	ouble	Curve	Hange	er, B	ronze	Metal,	<del>5/8</del>	inch	Stud	i	<b>EAC</b> :	
Barditus.	6545—	"	"	"		"	"	34	. "	"	• • • • • • • • • • • • • • • • • • • •	1 8	89
Fulguritam.	3174—	"	"	"	Mall.	Iron,	Galv.,	5∕8	"	"		,	92
Barrimus.	6546 —	"	"	"	"	"	"	3⁄4	"	"		:	92
Fuligineam.	3175—	"	"	"	• •	"	Jap.,	<del>5/8</del>	"	"		;	88
Barriturus.	6547	"	"	"	"	"	"	3/4	"	"		;	88

# Single Curve Hanger.

#### Patented.

## Type M-8.



CODE WORD. Fulloniam.	NO. 3176—S	Single	Curve	Hanger,	Mall.	Iron,	Galv.,	<del>5/8</del>	inch	Stud	EACH. \$ 0 99
Barrivimus.	6549—	"	"	"	"	"	"	3⁄4	"	"	99
Fulminabam.	3177—	"	"	"	"	"	Jap.,	5∕8	"	"	94
Basaltibus.	6550	"	"	"	"	"	"	34	"	"	94

# Double Curve Hanger.

Patented.

## Type M=8.



CODE WORD. Fulseram.	<b>NO.</b> 3178—D	ouble	Curve	Hanger,	Mall.	Iron,	Galv.,	5∕8	inch	Stud	EACH. \$ 1 10
Basculus.	6551—	"	"	"	"	"	"	34	"	"	1 10
Fumiferam.	3179—	"	46	44	"	"	Jap.,	5∕8	44	"	1 06
Basiamus.	6552—	"	44	"	"	"	"	3/4	"	"	1 06

## Straight Line Hanger.

### Type N.



In this style of Hanger the insulation used is the Dirigo, which is moulded directly into the hanger casting with the stud bolt in place. The interior ribs on the former and the flanged head of the latter prevent all possibility of either the insulation or the stud bolt working loose. A circular washer fitted over the stud bolt provides a bearing surface for the boss of the trolley ear or clamp, and also serves to secure the insulation in the shell of the hanger.

The casting is either of malleable iron or bronze metal and partially envelops the insulation, protecting it from moisture and any accidental blows of the trolley wheel. These Hangers can be furnished with any size of stud bolt desired, but are regularly made as listed below.

code word. Frigescam.	NO. 3143—St	raight	Line	Hange	r, Broi	nze	Metal,	5∕8	inch	Stud	EACH. \$ 1 43
Basia turus.	6553	"	"	44	"		46	3/4	"	"	1 43
Frigidabam.	3144—	66	"	" ]	Mall. I	ron,	Galv.,	5∕8	"	"	79
Basibus.	6554	"	"	44	"	"	"	3/4	"	"	79
Frigoratam.	3145—	"	"	"	"	"	Jap.,	<del>5∕8</del>	"	"	77
Batue bamus.	6555—	"	"	"	"	"	"	34	"	"	77

See pages 150 to 193 for list of Trolley Ears and Clamps.

# Barn Hanger. Type N.



THIS type of Hanger is arranged to be attached to an overhead support by means of lag screws or similar fastenings. It is for use in car barns, mines and similar localities. The height from top of hanger body to lower edge of skirt is  $2\frac{1}{2}$  inches.

CODE WORD.	MO									EACH.
	NO. 3993—-E	Barn	Hang	ger, B	ronze	Metal,	5/8	inch	Stud	
Batueremus.	6556	"	"		"	"	3/4	"	"	 1 50
Lepticam.	3994	"	"	Mall.	Iron,	Galv.,	5/8	"	"	 81
Batuimus.	6557	"	"	"	"	4.6	34	"	"	 81
Lethabam.	3995—	"	"	"	"	Jap.,	5/8	"	"	 79
Baubaturus.	6558-	"	44	4.6	"	4.6	3/4	44	"	 79

## Swiveled Pipe Bracket Hanger.

Single Insulation.

Type N.



CODE WORD.	NO.											EAC	н.
Lentaveram.	3988—F	Pipe Br	acket	Hanger,	Mall.	Iron,	Galv.,	<b>⅓</b> 8	inch	Stud		\$ 1 3	32
Beantibus.	6560	"	"	66	"	"	"	3⁄4	"	"	• • •	1 :	32
Lentescam.	3989—	"	"	"	"	"	Jap.,	5∕8	46	"		1 :	<b>2</b> 8
Bearemus.	6561-	"	44	46	"	"	"	3/		44		1 :	28

For 1¼, 1½ and 2 inch pipe.

In ordering Hangers state the size of pipe they are to be used with.



## Swiveled Pipe Bracket Hanger.

Double Insulation.

Type N.



CODE WORD.	NO.									EACH.	
Lepidianam.	3991—Pipe	Bracket	Hanger,	Mall.	Iron,	Galv.,	<del>5∕</del> 8	inch	Stud	\$ 1 65	
Beaturus.	6563—''	"	"	"	"	"	3/4	"	<b>"</b> …	1 65	
Leponticam.	3992- "	"	"	"	"	Jap.,	5∕8	"	<b>"</b> …	1 60	
Beaveramus.	6564—"	"	46	"	44	"	3/4	"	"	1 60	

For  $1\frac{1}{4}$ ,  $1\frac{1}{2}$  and 2 inch pipe.

In ordering Hangers state the size of pipe they are to be used with.



## Straight Line Hanger.

### Type N-W.



THE Type N-W Hangers (the Straight Line form of which is shown in the accompanying illustration) appearing on the following pages are in duplicate of the Type N listed on the pages preceding, with the exception of the stud bolt, which is arranged especially for use with the Type D-W Trolley Clamps illustrated on pages 151 and 170.

For this purpose the stud bolt is provided cone shaped on the projecting end and internally threaded, so as to make a proper fit with the stud bolt in the D-W Clamps.

CODE WORD.  Frigulatam.	NO. 3146—St	NO. 3146—Straight Line Hanger, Bronze Metal								
· ·	3147—	Ü		Ο,			Galvanized			
Fritinniam.	3148—	"	"	"	"	"	Japanned	77		

See pages 151 and 170 for Type D-W Trolley Clamps.



## Barn Hanger.

## Type N=W.



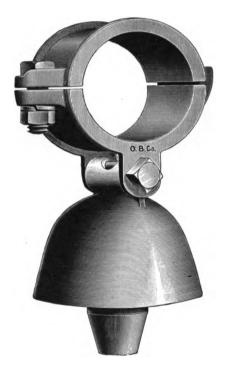
THIS Hanger resembles the Type N on page 125 with the single exception of the projecting stud bolt. It is intended for use in car barns or under similar conditions where a hanger of this form is required.

CODE WORD.	NO.											
Libandam.	4002—Barn	Hange	r, Bronze Metal	\$ 1 50								
Libatam.	4003—"	"	Malleable Iron, Galvanized	81								
Liberabam.	4004—"	"	" " Japanned	79								

## Swiveled Pipe Bracket Hanger.

Single Insulation.

Type N-W.



CODE WORD.	NO.							EA	CH.
Let haturam.	3997—P	ipe Br	acket	Hanger,	Malleable	Iron,	Galvanized	\$ 1	32
Lethaveram.	3998—	"	"	"	"	"	Japanned	1	28

For 11/4, 11/2 and 2 inch pipe.

In ordering Hangers state the size of pipe they are to be used with.



# Swiveled Pipe Bracket Hanger.

Double Insulation.

Type N-W.



CODE WORD.	NO.						EA	CH.
Levigabam.	4000—Pipe 1	Bracket	Hanger,	Malleable	Iron,	Galvanized	\$ 1	65
Leviticam.	4001—"	"	"	"	"	Japanned	1	60

For  $1\frac{1}{4}$ ,  $1\frac{1}{2}$  and 2 inch pipe.

In ordering Hangers state the size of pipe they are to be used with.



# Straight Line Hanger. Type J.



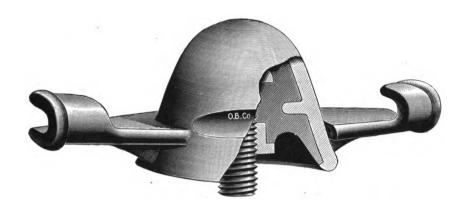
THE above cut shows the form of the Type J Straight Line Hanger, as well as, in part, a sectional view of it. The body casting is in one piece and the Dirigo insulation is moulded directly into it, being held securely in place by the interior ribs and corrugations, as shown. The stud bolt is provided with a flanged head, which secures a firm anchorage for it in the insulation, and is also fitted with a circular iron washer which furnishes a bearing surface for the boss of the trolley ear or clamp used in connection with the Hanger.

CODE WORD.	NO.											EACH.
Repedabam.	5485—S1	traight	Line	Hange	er, B	ronze	Metal,	% ir	nch	Stud	1	\$ 1 87
Repegeram.	5486—	"	"	" I	Mall.	Iron,	Galv.,	5∕8	"	"		99
Repellam.	5487	"	"	"	"	"	Jap.,	5/8	"	"		94

See pages 150 to 193 for list of Trolley Ears and Clamps.

## Straight Line Hanger.

### Type L.



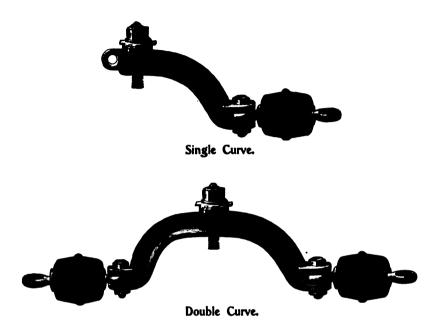
THIS Hanger is of extra heavy design and is made correspondingly larger and heavier throughout than the Type J Hanger described on the opposite page, which it somewhat resembles. The stud bolt is provided with a flanged head, which, in addition to interior ribs on the body casting, serve to secure the several parts of the Hanger firmly together. The lower surface of the insulation is protected by a circular iron washer threaded on to the stud bolt, which also serves as a bearing surface for the boss of the trolley ear or clamp.

CODE WORD.  Repetam.	no. 5491—S	traight	Line	Hanger,	Mall.	Iron,	Galv.,	5/8	inch	Stud	EACH. \$ 1 06
Repetundam.	5493—	"	"	"	"	"	"	3⁄4	"	"	1 10
Repetebam.	5492—	"	"	"	"	"	Jap.,	<del>5/8</del>	"	"	1 01
Repigneram.	5494—	"	"	"	"	"	"	3⁄4	"	"	1 06

See pages 150 to 193 for list of Trolley Ears and Clamps.



## Single and Double Curve Pull-Overs.

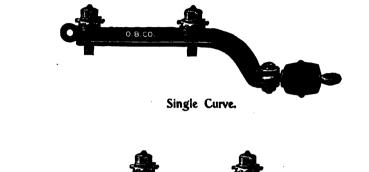


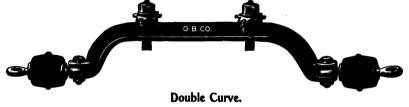
THESE Pull-Overs consist of malleable iron yokes to which are attached Premier Strain Insulators, to afford the necessary insulation, and threaded stud bolts with hexagonal Cap Lock Nuts. These Cap Nuts are made with a series of lugs projecting horizontally from their lower edge, and, being of malleable iron, some of them can be turned downward so as to engage with one of the two projections set on the body casting of the Pull-Over for this purpose, thus preventing the Nuts from unscrewing and backing off. Any of the standard sizes and styles of Ears, also the Type W and Detroit Trolley Clamps for Round, Figure 8 and Grooved trolley wires, may be used with the Pull-Overs to equal advantage.

CODE WORD.  Lignatam.	NO. 4011—Sing	le Curve	Pull-	-Over,	Galvanized,	5⁄8	inch	Stud	EACH. \$ 0 79
Cingulam.	2119—"	"	"	"	Japanned,	<b>5</b> %	"		77
Ligniferam.	4012—Dou	ble ''	"	"	Galvanized,	5/8	"		1 43
Cinnameam.	2120 "	44	"	44	Japanned,	5⁄8	"	"	1 40

## Single and Double Curve Pull-Overs.

### For Two Parallel Trolley Wires.



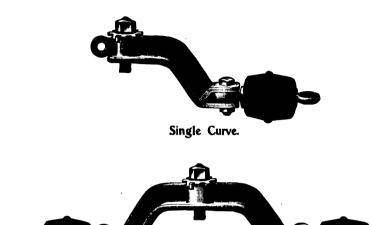


THE Single and Double Curve Pull-Overs, illustrated above, are similar in every way to those listed on the opposite page except that they are made to suspend two parallel trolley wires, with a separation of 6 inches between them, instead of one wire only. They resemble them in the respect that they are provided with the hexagonal Cap Lock Nut, and, while extensively used to advantage in combination with the Figure 8 and other designs of conductors which are like it, are equally suitable for Round trolley wire. In this form of suspension the two parallel trolleys are insulated from the supporting wires, but are in electrical connection with each other.

CODE WORD.  Ligulam.	NO. 4013—Single	Curve	Pull	-Over,	Galvanized,	5/8	inch	Studs	 EACH. \$ 1 14
Cinnanam.	2121—"	"	"	"	Japanned,	5∕8	"	"	 1 10
Liguriam.	4014—Double	e "	"	"	Galvanized,	5∕8	"	"	 1 65
Circinabam.	2122—"	61	"	"	Japanned,	5/8	"	66	 1 60

# Single and Double Curve Pull-Overs.

Extra Heavy.



Double Curve.

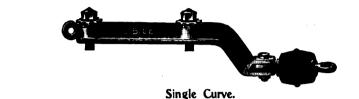
THESE Pull-Overs are almost in duplicate of those which are shown and described on pages 134 and 135, the essential difference being that the malleable iron yokes are of greater cross-section and correspondingly heavier. They are intended only for use where the side strains on curves are much severer than usual. The special feature of the Locking Cap Nut, as embodied in the standard Pull-Overs, is also present in these. With these Pull-Overs may be used any of the standard sizes and styles of Ears, also the Type W and Detroit Clamps for Round, Figure 8 and Grooved trolley wires.

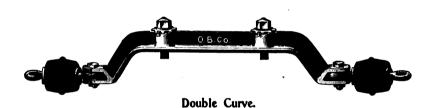
CODE WORD. Fumigabam.	NO. 3180—S	ingle (	Curve	Pull-	-Over,	Galvanized,	<del>5/8</del>	inch	Stud	 EACH. \$ 0 84	
Bellidibus.	6573—	"	"	"	"	"	3/4	"	"	 86	,
Fumosam.	3181—					Japanned,	5∕8	"	"	 81	
Bellosus.	6574—	"	"	"	"	"	34	"	"	 84	
Functuram.	3182—D	ouble	"	"	"	Galvanized,	5∕8	"	"	 1 45	
Beluinus.	6575—	"	"	"	"	• 6	3/4	"	"	 1 47	
Fundaturam.	3183—	"	"	"	"	Japanned,	5/8	"	"	 1 43	
Benefiamus.	6576—	"	"	"	"	"	3/4	"	"	 1 45	

## Single and Double Curve Pull=Overs.

Extra Heavy.

For Two Parallel Trolley Wires.

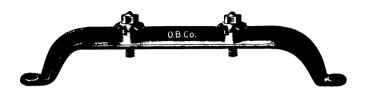




THE Extra Heavy Pull-Overs illustrated above resemble those shown on the opposite page in the respect that the yoke castings are more than ordinarily strong and heavy to make them suitable for special construction work. As the cuts indicate, they are intended for suspending two trolley wires in parallel, allowing a separation of 6 inches between them. The various standard sizes and styles of Ears, also the Type W and Detroit Trolley Clamps for Round, Figure 8 and Grooved wires can be used with them.

CODE WORD. Ligustinam.	NO. 4015—Single C	Curve	Pull-	Over,	Galvanized,	5/8	inch	Stud	s	EACH. \$ 1 21
Bennarius.	6577— "	"	"	"	"	3/4	46	"		1 25
Limbatam.	4016—"	"	"	"	Japanned,	5∕8	"	"		1 14
Berbecibus.	6578 ''	"	"	"	"	3∕4	"	"		1 18
Limitabam.	4017—Double	"	"	"	${\bf Galvanized,}$	5∕8	66	"		1 76
Bereniceus.	6579— ''	"	"	"	"	3/4	"	"		1 80
Limitaneam.	4018—"	"	66	"	Japanned,	5/8	"	"		1 72
Betaceus.	6580 "	"	"	"	. "	3/4	"	"	• • • • • • • •	1 76

### Twin Strain Yoke.



THE Twin Strain Yoke illustrated above is intended for supporting and anchoring two parallel trolley wires in electrical connection with each other at a distance of 6 inches apart. The necessary insulation should be provided by strain insulators connected into the span wire, and for this purpose the Premier Strain Insulator with Clevis is especially recommended.

CODE WORD.  Repudiabam.		Strain	Yoke	Mall	Iron	Galv	5.6	inch	Studs	 EACH.
Repugnabam.			•		•	•				•
Repudiosam.	5508-	_ "	"	"	"	Jap.,	5∕8	"	"	 99
Repulsabam.	5510	- "	"	"	"	66	3/4	"	"	 1 04

## Twin Suspension Yoke.



THIS device is especially adapted to suspending two parallel trolley wires in electrical connection with each other from a flexible pole bracket, but may also be used to advantage on span wire construction. The side arms are fitted with Premier Strain Insulators.

CODE WORD.	NO.									EAC	н.
Repunctam.	5511—Su	spension	Yoke,	Mall.	Iron,	Galv.,	⅓	inch	Studs	 \$ 1	60
Repurgabam.	5513—	"	"	"	"	"	3⁄4	44	"	 1	65
Repungebam.	5512—	"	"	"	"	Jap.,	5∕8	"	"	 1	58
Reputes cam.	<b>5514</b> —	"	"	"	"	"	3/4	"	"	 1	62

## Guard Wire Insulators.

### Dirigo Insulation.



Nos. 2127-28.



Nos. 2129-30.



Nos. 2131-32.

THE construction of the Guard Wire Insulators, illustrated above, is such that great strength, both electrical and mechanical, is combined with a minimum amount of weight; the result being a light, strong support for guard wires that will securely insulate and hold them in position. The insulating material used is Dirigo.

CODE WORD.	NO.		•	EACH.
Citeram.	2127—Straigh	t Line,	Bronze Metal	\$ 0 40
Citratam.	2128— "	"	Malleable Iron	26
Citriam.	2129—Single	Curve,	Bronze Metal	37
Clamabam.	2130— "	44	Malleable Iron	26
Clamaturam.	2131—Double	"	Bronze Metal	46
Clamaveram.	2132—"	"	Malleable Iron	28

# Guard Wire Insulators.

## Porcelain Insulation.



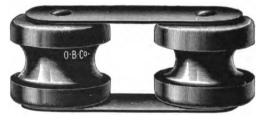
Nos. 1081-82.







Nos. 1085-86.



No. 1087.

CODE WORD.	NO.	EACH.
Accantabam.	1081—Straight Line, Bronze Metal	\$ 0 60
	1082— " Malleable Iron	
Accensebam. ·	1083—Single Curve, Bronze Metal	40
Acceperam.	1084— " Malleable Iron	21
Acceptabam.	1085—Double "Bronze Metal	45
Accersabam.	1086— " Malleable Iron	23
Accianam.	1087—Strain Insulator	35

## Jamme Mine Hanger.

#### Patented.



THE Jamme Mine Hanger, which is similar to the "Standard, Form 1," on page 142, except in the method of supporting, is suspended directly from the roof of the mine, thus economizing head room and doing away with the necessity of using supporting timbers. The Hanger is secured in position by expanding, through the medium of a tapered hardwood wedge, the slotted end of the suspension pipe in a hole of the proper size and depth drilled in the mine roof. The standard length of this pipe is 7 inches; other lengths furnished to order.

CODE WORD.	NO.		EACH.
Confidam.	2218—Mine Hanger,	Bronze Metal, 5% inch Stud	\$ 1 76
Confidebam.	2219— " "	Malleable Iron, 5% " "	1 10

Self-Feeding Mine Drill, for drilling mine roofs for Jamme Mine Hangers, etc., listed on page 544.

## Standard Mine Hanger.

#### Form 1.



THIS Insulator is so designed and constructed as to meet especially the requirements of a trolley wire hanger for use in mines that will be both durable and efficient. By referring to the cut shown above, it will be seen that the insulation is guarded against accidental blows of the trolley wheel, and protected from moisture dripping from the roof of the mine, by a metal covering which partially envelops it; and that the trouble usually arising from surface leakage of the current, due to a deposit of conducting material on the outside of the Insulator, has been avoided by the novel form of construction used.

CODE WORD.	NO.				EACH.
Abusam.	1079—Mine Hanger,	Bronze Metal,	⅓ inch	Stud	\$ 1 81
Abusivam.	1080 " "	Malleable Iron.	5/8 "	"	88

See page 148 for Suspension Bolt.

# Standard Mine Hanger.

#### Form 2.



THIS form of the Standard Mine Hanger is exactly in duplicate of the Form 1 described on the opposite page, except in the manner of suspension. The side supporting arm is intended for attachment to a roof timber by means of lag screws, being furnished with two ½ inch holes for this purpose. The advantage which this form of Hanger possesses lies in the small amount of head room which it requires, making it especially suitable for use in "low vein" mines.

CODE WORD.	NO.				EACH.
Bibacibus.	6581—Mine Hang	er, Bronze Metal,	⅓ inch	Stud	\$ 1 82
Bibebamus.	6582 " "	Malleable Iron.	56 "	"	99

See Section Five for Lag Screws.



# Type A Mine Hanger.



THE Type A Mine Hanger, which is shown in the above illustration, somewhat resembles in general form the Jamme Mine Hanger listed on page 141. It is arranged for direct attachment to the roof of the mine by means of an expansion bolt; the boss of the Hanger being drilled and tapped to take a standard 5/8 inch stud bolt. Either the Type A-Form 2 Expansion Bolt or the Form 2 Suspension Bolt listed on pages 147 and 148 respectively, is suitable for use in connection with this Hanger. The height of Hanger from top of boss to lower surface of insulation is  $3_{1}$  inches.

CODE WORD.	NO.					EACH.
Seminariam.	5781-Mine Hanger,	Bronze Metal,	⅓ iı	nch	Stud	\$ 1 54
Seminatam.	5782— " "	Malleable Iron,	5⁄8	"	"	88

See pages 147 and 148 for Suspension Bolts.



## Type B Mine Hanger.



In the Type B Mine Hanger illustrated above, the insulation is moulded directly into the hanger casting with the stud bolt in place. The upper end of the stud bolt is provided with a flanged head, which, together with the interior ribs on the body casting, serve to secure the several parts of the Hanger firmly together. The Hanger is intended to be attached directly to the roof of the mine by means of an expansion bolt, and for this purpose either the Type A-Form 2 Expansion Bolt or the Form 2 Suspension Bolt described on pages 147 and 148 respectively, is recommended. The height of Hanger from top of boss to lower surface of insulation is  $2\frac{1}{2}$  inches.

CODE WORD.	NO.	EACH.
Semipersam.	5783-Mine Hanger, Bronze Metal, ¾ inch Stud	\$ 1 21
Semirosam.	5784— " Malleable Iron, ¾ " "	66

See pages 147 and 148 for Suspension Bolts.



# Type G Mine Suspension.



THE Type G form of Mine Suspension is intended to be attached directly to the roof of the mine, no intervening timbers being required to support it. As the illustration shows, it consists of a substantial malleable iron body casting, which is fitted with a Type G Insulator Cap and Washer. To properly support the Hanger an expansion bolt is required, and the Type A-Form 1 Bolt shown on the opposite page is particularly recommended for the purpose, having been designed especially for use with this Hanger.

CODE WORD. Semidoctam.		Mine	Hanger,	<del>5</del> ⁄8	inch	Stud,	Plain	Washer.	 EACH. \$ 0 99
Semiferam.	5778—	"	"	5/8	66	46	Lock	" .	 1 01
Semilixam.	5779—	66	"	34	"	"	Plain	".	 1 01
Seminandam.	5780	"	"	3/4	"	"	Lock	".	 1 03

See opposite page for Suspension Bolt.



## **Expansion Bolts.**

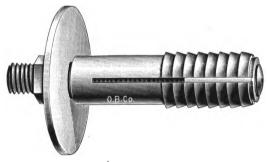
## Type A-Form 1.



THE Expansion Bolt illustrated above is intended primarily for use with the Type G Mine Hanger described on the opposite page. It consists of a malleable iron shell 1½ inches in diameter, fitted with an internal stud bolt and cone shaped nut, by means of which the shell is expanded when in position. The projecting end of the stud bolt is made with a standard 5% inch thread and fitted with a nut and washer for securing the Expansion Bolt in position and supporting the mine hanger.

CODE WORD.	NO.									E	AC	н.
Sellulam.	5773—Ex	kpansion	Bolt,	Length	of	Shell	4	inches	3	\$	0	34
Sementatam.	5774—	- "	"	"	"	66	6	"				41

## Type A—Form 2.



THIS Bolt is a modified form of the one described above, designed especially for use with the Types A and B Mine Hangers listed on pages 144 and 145. The projecting stud bolt is made with a 5% inch standard thread and provided with an hexagonal head and a large iron washer, by means of which the Expansion Bolt is secured in position.

CODE WORD.	NO.								EACH.
Semesam.	5775—E	xpansion	Bolt,	Length	$\mathbf{of}$	Shell	4	inches	 \$ 0 38
Semiannuam.	5776—	"	66	"	"	"	6	66	 45

## Suspension Bolts.

For Mine Hangers.

#### Form 1.



THIS device is used with Mine Hangers such as the "Standard, Form 1," page 142, when they are to be attached directly to the roof of the mine, without intervening timber supports. It is 6 inches long and the threaded end is ½ of an inch in diameter.

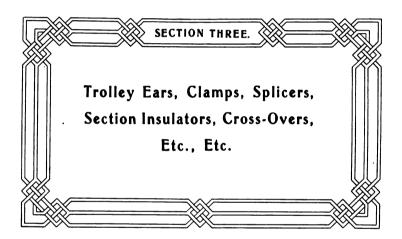
CODE WORD.	NO.	J	EAC	н.
Depilandam.	2649—Suspension Bolt	\$	0	13

#### Form 2.



THIS form of Suspension Bolt consists of two parts; a malleable iron Pin and a hardwood Sleeve. It is installed by drilling a hole in the mine roof slightly less in diameter than the wood sleeve and driving the latter into it. The pin is then driven into the sleeve, causing the latter to expand in the hole until it is firmly anchored in place. The barbed projections on the pin serve to hold it securely in position. This device may be used with either the Types A or B Mine Hangers, listed on the preceding pages. A special Driving Tool can be furnished by means of which the pin can be driven into the sleeve without injuring the threaded end of it.

CODE WORD.	NO.	EACH.
Comsumemus.	6975—Suspension Bolt, complete, % inch Stud	\$ 0 22
Contatus.	6976—Malleable Iron Pin	15
Contemptus.	6977—Hardwood Sleeve	07
Contentus.	6978—Driving Tool	88



## Types W, D-W and M-W Trolley Clamps.

THE TROLLEY CLAMPS, embraced under the above heading, resemble each other in general form and differ in construction only in the style of stud bolt with which they are equipped, and the resulting method of attachment between them and the supporting hanger.

THESE CLAMPS consist of two interlocking jaws which are hinged on a steel pin. This pin, in addition to forming a pivot for the jaws, also passes through the enlarged head on the lower end of the stud bolt, securing the latter in place and preventing its turning when the corresponding part to which it is attached is threaded on to it. The clamping effect is secured by a cone shaped sleeve, stud bolt or nut, as the case may be in the different types of Clamps, which fits into a corresponding conical recess in the upper parts of the Clamp, and which, by forcing them apart, in turn closes the jaws together over the wire, thus securely gripping it. When used with Round Trolley Wire, these several forms of Clamps are furnished only in bronze metal, on account of the lips which necessarily come into contact with the trolley wheel, and which, if made of malleable iron, would cause considerable wear to the wheel and excessive sparking.

THE TYPE W CLAMP is designed especially for use with the several forms of Pull-Overs and Suspension Yokes shown on pages 134 to 138. The stud bolt of the Clamp is provided with a cone shaped thimble which fits into the Clamp and by means of which the jaws of the latter are tightened up on the wire.

THE TYPE D-W CLAMP is intended for use within the Types D and D-8 Hangers when equipped with Type D-W Insulated Bolts, or the Type N-W Hangers. The central portion of the Clamp has a tapered opening at the top which corresponds to the conical shaped study of the various hangers with which it is used. These study, by threading on to the short bolt with which the Clamp is provided, serve as a means of tightening up the Clamp.

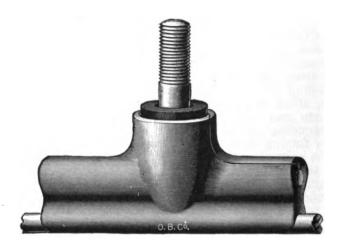
THE TYPE M-W CLAMP was primarily designed to combine with the Mine Hangers listed on pages 141 to 146, but may be used with any hanger equipped with a 5% inch stud. It is provided with a special nut, cone shaped on one end to correspond to the recess in the top of the Clamp, and hexagonal in form on the other so that the Type D Wrench may be used on it. The stud bolt in the Clamp has a left hand thread, while the thread on the hexagonal end of nut is right handed. This arrangement allows the Clamp to be either loosened or tightened on the wire by simply turning the nut in the proper direction.

FEEDER CLAMPS of Types W, D-W and M-W forms are listed on pages 169, 170 and 171 respectively.

# Type W Trolley Clamp.

#### Patented.

## For Round, Figure 8 and Grooved Wires.



Type W Clamp For Round Wire.

CODE WORD.	NO.									EACH.
Accindendam.	1100-Cla	mp, Bronze	Metal,	for	No.	0 E	3. & S	. Round	Wire	\$ 0 58
Confingam.	2220 "	4.6	66	"	"	2-0	"	44	"	59
Confisuram.	2221 "	"	"	"	"	3-0	"	"	"	62
Confixam.	2222- "	"	"	"	"	4-0	"	66	"	64
Confixeram.	2223—"	"	"	"	"	0	"	Fig. 8	"	62
Fluctuatam.	3115— "	Mall. Iron	, Galv.,	"	"	0	"	"	"	37
Conflabam.	2224—"	Bronze Me	etal,	"	"	2-0	"	66	"	64
Fluentabam.	3116—"	Mall. Iron	, Galv.,	"	"	2-0	"	"	"	38
Confluam.	2225—"	Bronze Me	etal,	44	"	3-0	"	44	"	66
Fluiscam.	3117—"	Mall. Iron	, Galv.,		44	3-0	"	66	"	40
Confluebam.	2226— "	Bronze Me	etal,	"	44	4-0	66	66	"	67
Flutandam.	3118 "	Mall. Iron	, Galv.,	. "	"	4-0	"	44	"	40
Femellam.	3045 "	Bronze Me	etal.	"	"	2-0	66	Grooved	٠	62
Feminatam.	3046—"	Mall. Iron	, Galv.,		"	2-0	"	"	"	36
Femininam.	3047 "	Bronze Me	etal,	"	"	3-0	66	"	"	63
Fenariam.	3048—"	Mall. Iron	Galv.	"	"	3-0	"	"	"	36
Fendam.	3049—"	Bronze Me	etal,	"	66	4-0	46	66	"	64
Fendebam.	3050—"	Mall. Iron	, Galv.,	, "	"	4-0	"	44	"	38

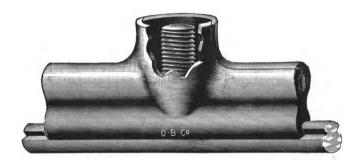
See page 149 for a description of the Type W Clamp.



# Type D=W Trolley Clamp.

#### Patented.

# For Round, Figure 8 and Grooved Wires.



Type D-W Clamp For Grooved Wire.

CODE WORD.	NO.											EACH.
Blatiebam.	2055Cl	amp,	Bronze :	Metal,	for	No.	0 B	. & S	. Round	Wire	<b>.</b>	\$ 0 55
Confoderam.	2227-	"	"	"	44	"	2-0	"	"	"		57
Confortam.	2228-	"	"	"	"	"	3-0	"	"	"		59
Confossam.	2229-	"	"	"	"	"	4-0	66	46	"		60
Confovebam.	2230	"	"	66	"	"	0	"	Fig. 8	"		59
Fluxeram.	3119—	" M	all. Iron	, Galv.	, "	"	0	"	"	"		35
Confremam.	2231	" B	ronze Me	etal,	"	"	2-0	"	66	"		60
Focillabam.	3120-	" M	all. Iron	, Galv.	, "	"	2-0	4.6	"	"		36
Confugiam.	2232-	" B	ronze Me	etal,	"	"	3-0	66	66	46		62
Foculandam.	3121—	" M	all. Iron	, Galv.	, "	"	3-0	"	44	"		36
Confusam.	2233—	" B	ronze Me	etal,	"	"	4-0	"	"	66	٠.,	65
Foculatam.	3122-	" M	all. Iron	, Galv.	, "	"	4-0	"	44	46		37
Fenerandam.	3051—	" B	ronze Mo	etal,	66	"	2-0	"	Grooved	l "		60
Feneratam.	3052	" M	all. Iron	, Galv.	., "	"	2-0	"	"	"		36
Fenisecam.	3053	" B	ronze Me	etal,	"	"	3-0	66	"	"		62
Ferbueram.	3054—	" M	all. Iron	, Galv.	., "	"	3-0	44	"	"		36
Ferebam.	3055	" B	ronze Mo	etal,	44	"	4-0	"	"	"		65
Fervendam.	3056 1	" M	all. Iron	, Galv	., "	"	4-0	"	66	"		37

[See page 149 for a description of the Type D-W Clamp.



# Type M-W Trolley Clamp.

#### Patented.

For Round, Figure 8 and Grooved Wires.



Type M-W Clamp For Figure 8 Wire.

CODE WORD.	NO.											EACH.
Confutabam.	2234—C	lamp,	<b>Bronze</b>	Metal,	for	No.	0	B. &	S. Round	Wir	е	\$ 0 65
Confutuam.	2235	"	"	"	"	"	<b>2</b> –0	"	"	"		66
Congarriam.	2236—	"	44	"	"	"	3-0	"	"	66		68
Congelatam.	2237	44	46	"	"	"	4-0	"	"	"		70
Congemam.	2238	"	"	"	"	"	0	"	Fig. 8	"		68
Fodabam.	3123	" M	all. Iron	, Galv.	, "	"	0	"	ű	"		48
Congemitam.	2239—	" B	ronze M	etal,	"	"	2-0	"	"	"		70
Fodaturam.	3124—	" M	all. Iron	, Galv.	, "	"	2–0	"	"	"		49
Conglaciam.	2240—	" B	ronze M	etal,	66	"	<b>3</b> –0	"	"	"		72
Fodaveram.	3125	" M	all. Iron	, Galv.	, "	44	3-0	"	44	"		49
Congliscam.	2241—	" B	ronze Me	etal,	66	"	4-0	"	44	"		74
Fodiendam.	3126	" M	all. Iron	, Galv.	, "	"	4-0	"	"	"		50
Fervescam.	3057	" B	ronze M	etal,	"	"	2-0	44	Grooved	"		70
Fervidam.	3058	" M	all. Iron	, Galv.	, "	44	2-0	"	44	"		49
Fervituram.	3059	"В	ronze M	etal,	"	"	3–0	"	"	"		71
Fessulam.	3060-	" M	all. Iron	, Galv.	, "	"	3-0	66	"	"		50
Festinabam.	3061—		ronze M		"	"	4-0	66	"	"		72
Festivam.	3062—	" M	all. Iron	, Galv.	, "	"	4–0	"	"	"		50

See page 149 for a description of the Type M-W Clamp.

## For Round, Figure 8 and Grooved Wires.

#### Form 1.



THE Form 1 Detroit Trolley Clamp is 4 inches in length, and made only for a 5% inch stud bolt. This Clamp will meet all ordinary requirements for straight line suspension, but the several styles shown on the succeeding pages are recommended where a heavier or stronger clamp is desired.

#### For 5/8 inch Stud Bolt.

CODE WORD.	NO.											EACH.
Accolebam.	1109—C	lamp,	<b>Bronze</b>	Metal,	for	No.	0	B. &	S. Round	Wir	е	\$ 0 40
Conjungam.	2245	66	"	"	"	"	2–0	"	"	"		41
Connisuram.	2246—	"	66	"	"	"	3–0	"	"	"		42
Connixam.	2247	"	"	"	44	"	4-0	66	4.6	"		44
Lingendam.	4025—	"	"	"	"	"	0	"	Fig. 8	"		41
Foedandam.	3127	" M	all. Iron	Galv.,		"	0	"	"	66		23
Linguatam.	4026	" Br	onze Me	etal,	"	"	2-0	"	"	"		41
Foedatam.	3128—	" Ma	all. Iron	Galv.,	"	"	2-0	"	"	"		23
Linigeram.	4027	" Br	onze Me	etal,	"	"	3-0	66	44	"		42
Foliosam.	3129	" Ma	all. Iron	, Galv.,	"	"	3-0	"	"	"		24
Linguam.	4028		onze Me		"	"	4-0	44	"	"		42
Folligenam.	3130	" M:	all. Iron	Galv.,	"	"	4-0	"	44	"		24
Fesulanam.	3063—	" Br	onze Me	tal,	66	"	2-0	"	Grooved	"		42
Fetabam.	3064—	" M	all. Iron,	Galv.,	"	"	2-0	"	"	"		24
Fetaveram.	3065		onze Me		"	"	3-0	"	44	"		42
Fetousam.	3066—	" Ma	all. Iron	Galv.,	"	"	3-0	"	"	"		24
Fibratam.	3067—		onze Me		"	"	4-0	44	"	"		42
Fibulandam.	3068	" M	all. Iron	Galv.,	"	"	4-0	"	"	"		24

#### For Grooved Wire.

#### Form 2.



THE Detroit Trolley Clamp, Form 2, illustrated above, resembles the Form 1 Clamp shown on the preceding page, with the exception that it is made 5 inches long and regularly supplied for use with Grooved Trolley Wire only. It is recommended only for straight line suspension.

#### For 5/8 and 3/4 inch Stud Bolts.

CODE WORD.	NO.	EACH.
Respueram.	5539—Clamp, Malleable Iron, Galvanized, for No. 2-0	
	B. & S. Grooved Wire, % inch Stud	.\$ 0 26
Restiebam.	5541—Clamp, Malleable Iron, Galvanized, for No. 2-0	•
	B. & S. Grooved Wire, ¾ inch Stud	. 27
Restiariam.	5540—Clamp, Malleable Iron, Japanned, for No. 2-0	
	B. & S. Grooved Wire, 1/2 inch Stud	. 24
Restinguam.	5542—Clamp, Malleable Iron, Japanned, for No. 2-0	
	B. & S. Grooved Wire, ¾ inch Stud	. 25
Restipabam.	5543—Clamp, Malleable Iron, Galvanized, for No. 3-0	22
D	B. & S. Grooved Wire, 5% inch Stud	. 26
Restituram.	5545—Clamp, Malleable Iron, Galvanized, for No. 3-0	0.5
D 121 1	B. & S. Grooved Wire, ¾ inch Stud	. 27
Restitatam.	5544—Clamp, Malleable Iron, Japanned, for No. 3-0	. 24
Restiveram.	B. & S. Grooved Wire, % inch Stud	. 24
nesuverum.	5546—Clamp, Malleable Iron, Japanned, for No. 3-0	. 25
Restrictam.	B. & S. Grooved Wire, ¾ inch Stud 5547—Clamp, Malleable Iron, Galvanized, for No. 4-0	. 20
nestricium.	B. & S. Grooved Wire, % inch Stud	. 26
Restruam.	5549—Clamp, Malleable Iron, Galvanized, for No. 4-0	. 20
nesti aciit.	B. & S. Grooved Wire, 34 inch Stud	. 27
Restringam.	5548—Clamp, Malleable Iron, Japanned, for No. 4-0	. 2.
10ccor ongano.	B. & S. Grooved Wire, % inch Stud	. 24
Restruebam.	5550—Clamp, Malleable Iron, Japanned, for No. 4-0	
	B. & S. Grooved Wire, ¼ inch Stud	. 25

### For Round, Figure 8 and Grooved Wires.

Form 3.



THIS Clamp, which is shown in the above illustration, resembles the clamps described on the preceding pages, except that it is made 8 inches long and correspondingly heavier. It is intended for use where the weight or strain is greater than the Forms 1 or 2 Clamps will safely carry. This Clamp is recommended for straight line suspension only.

#### For 5/8 inch Stud Bolt.

			/	0							
CODE WORD.	NO.										EACH.
Conquadram.	2248—C	lamp,	Bronze	Metal,	for	No	. 0	В. &	S. Round	Wire	. \$ 0 68
Conquiram.	2249	"	"	"	"	"	2-0	"		"	. 70
Consanabam.	2250-	"	"	"	"	"	3-0	"	"	"	. 72
Consaturam.	2251-	"	44	"	"	"	4-0	4.6	"	"	. 73
Linquebam.	4029—	"	44	"	"	"	0	66	Fig. 8	"	. 66
Fomentabam.	3131	" M	all. Iron,	Galv.	, "	"	0	"	"	"	. 34
Lintrariam.	4030-	" B	ronze Me	etal,	"	"	2-0	"	"	"	. 66
Fontaneam.	3132-	" M	all. Iron,	Galv.	, "	"	2-0	"	"	"	. 34
Liquabam.	4031—	" B	ronze Me	etal,	66	"	3–0	"	"	"	. 68
Forandam.	3133	" M	all. Iron,	Galv.	, "	"	3–0	"	"	"	. 34
Liquaturam.	4032	" B	ronze Me	etal,	"	"	4-0	"	"	"	. 68
Forimcam.	3134—	" M	all. Iron,	Galv.,	. "	"	4-0	"	"	"	. 34
Fibulatam.	3069	" Br	onze Me	tal,	"	6.6	2–0	"	Groove	<b>1 "</b>	. 67
Ficariam.	3070-	" M	all. Iron,	Galv.	, "	"	2-0	. 44	44	"	. 33
Fictitiam.	3071-	" B	ronze Me	etal,	"	"	3-0	"	"	"	. 67
Fidebam.	3072—	" M	all. Iron,	Galv.,		"	3-0	44	"	"	. 33
Fidejubeam.	3073—		ronze Me		44	44	4-0	"	"	"	. 67
Fideliam.	3074—	" M	all. Iron,	Galv.,	, "	"	4–0	46	"	" .	. 33

### For Round, Figure 8 and Grooved Wires.

Form 3.



THE Clamps listed below are similar in every respect to those on the preceding page, with the exception of being made to fit a ¾ inch stud bolt. They are intended for straight line suspension only.

#### For 3/4 inch Stud Bolt.

CODE WORD.	NO.											EACH.
Bibentibus.	6583—C	lamp,	Bronze	Metal,	for	No.	0	B. & S	S. Round	Wire	e	\$ 0 73
Bibionibus.	6584	"	"	"	"	"	2-0	4.6	44	44		75
Bibissemus.	6585-	"	46	"	"	"	3-0	"	"	66		77
Bibiturus.	6586-	"	"	"	66	"	4-0	ii	"	"		79
Bifidus.	6587-	"	"	46	"	"	0	"	Fig. 8	"		72
Biformibus.	6588	" M	all. Iron	ı, Galv.	, "	"	0	"	66	44		36
Bijugibus.	6589	" B	ronze M	etal,	"	"	2-0	"	66	"		72
Bilbendus.	6590	" M	all. Iron	, Galv.	, "	"	2-0	"	66	"		36
Bilibribus.	6591	" B	ronze M	etal,	"	"	3-0	"	"	"		73
Bimulus.	6592-	" M	all. Iron	, Galv.	, "	"	3-0	"	4.6	"		36
Bimus.	6593-	" B	ronze M	etal,	"	"	4-0	"	66	"		73
Binionibus.	6594	" M	all. Iron	, Galv.	, "	"	4-0	"	66	"		36
Bipedibus.	6595	" B	ronze M	etal,	"	"	2-0	6.6	Grooved	l "		72
Bipennibus.	6596	" M	all. Iron	, Galv.	, "	"	2-0	"	"	"		34
Bisontibus.	6597-	" B	ronze M	etal,	"	"	3-0	"	"	"		72
Bisyllabus.	6598-	" M	all. Iron	, Galv.	, "	"	3-0	"		"		34
Bithynius.	6599	" B	ronze M	etal,	"	"	4-0	"	"	"		72
Bituricus.	6600—	" M	all. Iron	, Galv.	, "	"	4-0	"	"	"	• • •	34

#### For Grooved Wire.

#### Form 4.



THE Detroit Trolley Clamp, Form 4, is intended especially for supporting the trolley wire on curves, where, on account of the severe side strains placed on the wire, a clamp of extra strength is required. It may also be used to advantage for straight line suspension. The end jaws are  $2\frac{1}{2}$  inches long, and the over-all length of the Clamp is 10 inches.

#### For 5/8 and 3/4 inch Stud Bolts.

CODE WORD.	NO.		EACH.
Resudabam.	5551—Clamp,	Malleable Iron, Galvanized, for No. 2-0	
	. =	B. & S. Grooved Wire, % inch Stud	\$ 0 42
Resumptam.	5553—Clamp.	Malleable Iron, Galvanized, for No. 2-0	•
•	• ,	B. & S. Grooved Wire, ¾ inch Stud	42
Resultabam.	5552-Clamp.	Malleable Iron, Japanned, for No. 2-0	
	1,	B. & S. Grooved Wire, % inch Stud	40
Resuturam.	5554Clamp.	Malleable Iron, Japanned, for No. 2-0	
	осот Ститър,	B. & S. Grooved Wire, 34 inch Stud	40
Retaliabam.	5555 Clamp	Malleable Iron, Galvanized, for No. 3-0	10
200000000000000000000000000000000000000	occo Clamp,	B. & S. Grooved Wire, % inch Stud	42
Retaxandam.	5557—Clamp	Malleable Iron, Galvanized, for No. 3-0	
1100akanaani.	ooo. Clamp,	B. & S. Grooved Wire, ¾ inch Stud	42
Retardabam.	5556Clamp	Malleable Iron, Japanned, for No. 3-0	
now would in.	oooo Clamp,	B. & S. Grooved Wire, % inch Stud	40
Retaxatam.	5558 Clamp	Malleable Iron, Japanned, for No. 3-0	40
neasaan.	oooo-Clamp,	B. & S. Grooved Wire, ¾ inch Stud	40
Retegendam.	5550 Clamp	Malleable Iron, Galvanized, for No. 4-0	40
newyenaum.	ooos—Clamp,		40
Dotoumakan	FFC1 Clamm	B. & S. Grooved Wire, % inch Stud	42
Retergebam.	bool—Clamp,	Malleable Iron, Galvanized, for No. 4-0	40
D-4	FF.00 (1)	B. & S. Grooved Wire, 1/4 inch Stud	42
Retenderam.	5560—Clamp,	Malleable Iron, Japanned, for No. 4-0	
ъ.	*****	B. & S. Grooved Wire, % inch Stud	40
Retexam.	5562—Clamp,	Malleable Iron, Japanned, for No. 4-0	
		B. & S. Grooved Wire, ¾ inch Stud	40

#### For Grooved Wire.

#### Form 5.



THE Form 5 style of Detroit Clamp shown above is made longer and correspondingly heavier throughout than the Form 4 illustrated on the preceding page, to adapt it for use where the weight or strain is greater than the Form 4 will safely carry. The over-all length of Clamp is 14 inches, and the end jaws are 5 inches long.

#### For 5/8 and 3/4 inch Stud Bolts.

NO.	•	EACH.
5563-Clamp,	Malleable Iron, Galvanized, for No. 2-0	
	B. & S. Grooved Wire, % inch Stud	\$ 0 53
5565—Clamp,		53
5564—Clamp		99
oooi Clamp,		50
5566—Clamp,	Malleable Iron, Japanned, for No. 2-0	
	B. & S. Grooved Wire, 34 inch Stud	50
5567—Clamp,		
5569—Clamp		53
ooob Clamp,		53
5568-Clamp,		00
• ,	B. & S. Grooved Wire, % inch Stud	50
5570—Clamp,		
		50
5571—Clamp,		
FFF0 (1)		53
5573—Clamp,		53
5579 Clamp		93
oo12—Clamp,		50
5574Clamn		00
oo.i Olamp,	B. & S. Grooved Wire. 3/2 inch Stud	50
	5563—Clamp, 5565—Clamp, 5564—Clamp, 5566—Clamp, 5569—Clamp, 5568—Clamp, 5570—Clamp, 5571—Clamp, 5573—Clamp,	5563—Clamp, Malleable Iron, Galvanized, for No. 2-0  B. & S. Grooved Wire, % inch Stud  5565—Clamp, Malleable Iron, Galvanized, for No. 2-0  B. & S. Grooved Wire, ¾ inch Stud  5564—Clamp, Malleable Iron, Japanned, for No. 2-0  B. & S. Grooved Wire, ¾ inch Stud  5566—Clamp, Malleable Iron, Japanned, for No. 2-0  B. & S. Grooved Wire, ¾ inch Stud  5567—Clamp, Malleable Iron, Galvanized, for No. 3-0  B. & S. Grooved Wire, ¾ inch Stud  5569—Clamp, Malleable Iron, Galvanized, for No. 3-0  B. & S. Grooved Wire, ¾ inch Stud  5568—Clamp, Malleable Iron, Japanned, for No. 3-0  B. & S. Grooved Wire, ¾ inch Stud  5570—Clamp, Malleable Iron, Japanned, for No. 3-0  B. & S. Grooved Wire, ¾ inch Stud  5571—Clamp, Malleable Iron, Japanned, for No. 4-0  B. & S. Grooved Wire, ¾ inch Stud  5573—Clamp, Malleable Iron, Galvanized, for No. 4-0  B. & S. Grooved Wire, ¾ inch Stud  5572—Clamp, Malleable Iron, Japanned, for No. 4-0  B. & S. Grooved Wire, ¾ inch Stud  5574—Clamp, Malleable Iron, Japanned, for No. 4-0  B. & S. Grooved Wire, ¾ inch Stud  5574—Clamp, Malleable Iron, Japanned, for No. 4-0  B. & S. Grooved Wire, ¾ inch Stud

## Soldered. Clinch and Semi-Clinch Ears.

#### For Round Wire.



Standard Boss.

THE Soldered, Clinch and Semi-Clinch Ears illustrated in several forms on the following pages, are now furnished with a standard size and form of boss which is regularly drilled and tapped to fit corresponding standard sizes of \( \frac{5}{8} \) and \( \frac{3}{4} \) inch stud bolts. This form of Boss, which is designated as the "Standard," displaces both the Types W and K Bosses heretofore furnished on these Ears. This change in the style of boss has been made with a view of simplifying the ordering of these Ears from the customer's standpoint, and to prevent any confusion which might arise as to the proper style of boss for use with any specified type of hanger; the "Standard" Boss being equally suitable for \( all \) styles of Trolley Wire Hangers (except the Type D with D-W Bolts, and the Type N-W) illustrated in this Catalogue.

The designs of the several forms of Ears embraced under the above heading have been improved with a view to eliminating any unnecessary weight and so disposing the metal in them as to secure maximum strength at the point where this is essential. The above illustration of the "Standard" Boss indicates how additional strength has been secured by a slight fillet of metal immediately beneath the rounded portion of the Boss.

In order to meet the increasing demand for devices suitable for extra heavy line construction, these several types of Ears, as well as a number of others, are now regularly furnished with Bosses drilled and tapped to fit ¾ inch stud bolts.

The Feeder Ears of the Soldered, Clinch and Semi-Clinch forms are listed on pages 170, 171 and 172, and the Double Strain Forms on pages 180 and 181.

# Soldered Trolley Ears.

#### For Round Wire.



A first class quality of bronze metal only is used in the Soldered Ears, which are made from patterns of sufficient weight and approved design to give proper strength and durability. All the finished parts of the Ear are carefully machined, particularly the groove, which is full and deep and tinned for soldering.

CODE WORD.	NO.		1	ength		ó Inches.						EACH.
Blandulus.	6601—Ear	for		_			Wire	5.6	inch	Stud		\$ 0 31
Blatiemus.	6602- "	"	"	2-0 2-0	"	"	"	5/8		"		33
Diatiemus.	0002							/0				00
		_				9 Inches.				<b></b> .		
Blatire mus.	6603—Ear										l	
Blatiturus.	6604—"	"	"	2-0	"	"	"	5∕8	"	"	• • • • • • • •	37
			L	ength	!	12 Inches	•					
Blativimus.	6605—Ear	for	No.	0 B.	& S	. Round	Wire,	5∕8	inch	Stud	l	\$ 0 41
Blendius.	6606—"	"	"	0	"	46	"	3/4	"	"		45
Boatibus.	6607— ''	"	"	2-0	"	"	"	5/8	"	"		42
Boatus.	6608 ''	"	"	2-0	"	"	"	3/4	"	"	. <b></b>	46
Bombitamus.	6609— ''	"	"	3-0	"	"	"	5/8	"	"		44
Bombiturus.	6610 ''	"	"	3-0	"	- "	"	3/4	"	"		47
			1	enøth		15 Inches	_					
Bombivimus.	6611—Ear	for		-				5/6	inch	Stud	l <b></b>	\$ 0 48
Bombycibus.	6612—"	"	"	0	"	"	"	3/4	"	"		52
Borius.	6613— ''	"	"	2-0	"	"	"	5/8	"	"		49
Boscidibus.	6614— "	"	"	2-0	"	"	"	3/4	"	"		54
Botracibus.	6615— "	"	"	3-0	"	"	"	5/8	"	"		51
Botulus.	6616— "	"	"	3-0	"	"	"	3/4	"	"		54
Bovabamus.	6617— "	"	"	4-0	"	"	"	5/8	"	"		52
Bovamus.	6618 "	"	"	4-0	"	"	44	3/4	66	"		56
Botamas.	0010							/4				00
		_		•		18 Inches				~. ·		• • • •
Bovantibus.	6619—Ear	for	No.		& S	. Round	Wire,	,	inch	Stud	1	•
Bovaremus.	6620—"			0				3/4			• • • • • • • •	60
Bovaturus.	6621—"	"	"	2-0	"	"	"	5∕8	"	"	• • • • • • • •	57
Bovavimus.	6622—''	"	"	2-0	"	"	"	3/4	"	"	• • • • • • •	61
Bovibus.	6623—"	"	"	3–0	"	"	"	5∕8	"	"		58
Bracatus.	6624—"	"	"	3-0	"	"	"	34	"	"		62
Bratus.	6625—"	"	"	4–0	"	4.6	"	5∕8	"	"		60
Brochus.	6626 "	"	"	4-0	"	"	"	3/4	"	"		64

# Clinch Trolley Ears. For Round Wire.



THE groove in this style of Ear is made of sufficient depth to allow the lips to be formed around the trolley wire, so they almost encircle it. As no solder is therefore required, the Ears as regularly made are not tinned, but can be furnished in that way if so ordered.

CODE WORD.	NO.			Length.		.6 Inches	i <b>.</b>					EACH.
Brumalibus.	6627—Ear	for	No.	0 B.		Round	Wire,	5/8	inch			\$ 0 31
Brutinus.	6628—"	"	"	2-0	"	"	"	5∕8	"	"	<b></b> .	31
				Length		9 Inches	s.					
Bruttianus.	6629—Ear	for						5/8	inch	Stud		\$ 0 37
Bubalus.	6630 ''	"		2-0	"	66	"	5/8	"			38
			1	l and th		12 Inche		, -				
Bubendus.	6631—Ear	for 1		.,				56	inah	Stud		\$ 0 44
Bubonibus.	6632— "	101	"	ов. 0	ω ιο. "	Kouna "	W 11'e,	78 3/4	111011			48
Bubulinus.	6633 "	"	"	2-0	"	"	"	74 5/8	"	,,	<b></b>	46
Bucerius.	6634— "	"	"	2-0	"	"	"	78 34	"		 	49
Bucinandus.	6635— "	"	"	3-0	"	4.6	66	74 5/8	"		<b></b> .	47
Bucinatus.	6636 ''	"	"	3-0	"	"	44	78 3/4	"	"		51
Dacmacus.	0000			•				74		•••		01
				-		15 Inche				<b>~</b> . •		• • ••
Bulebus.	6637Ear					Round				Stud		\$ 0 53
Bulliturus.	6638—"	"	"	0	"	"	"	3/4	"			57
Buniadibus.	6639—"	"	"	2-0	"	4.6	44	5∕8	"		• • • • •	54
Burgus.	6640—"	"	"	2-0	"	"	4.6	3/4	"			58
Butiendus.	6641—"	"	"	3-0	"	"	"	5/8	"	"		56
But it urus.	6642—"	66	"	3-0	"	"	"	3/4	"			59
Buxus.	6643—"	"	"	4-0	"	"	"	5/8	"	"	<b></b> .	57
Byzacius.	6644 "	"	"	4-0	"	"	"	3/4	"	"		61
			1	ength .		18 Inche	s.					
Byzantinus.	6645—Ear	for l		-		Round		5/2	inch	Stud		\$ 0 62
Cacabimus.	6646— "	"	"	0	"	"	"	3/4	66			65
Cacandus.	6647 "	"		2-0	"	"	"	5/8	"	"		62
Cacatus.	6648 "	"	"	2-0	"	"	"	3/4	"	,,		67
Cadamus.	6649— "	"	"	3-0	"	¥	"	5/8	"	"		64
Cadendus.	6650 ''	"	"	3-0	"	"	"	3 <u>/</u> 4	"			68
Caecutimus.	6651— "	"	"	4-0	"	44	"	5/8	"	"		65
Caedibus.	6652 "	"	"	4-0	"	"	"	78 3/4	"	"		69
Cacabono.	0002							/4		• • •		00

In ordering Ears state if the lips are desired tinned for soldering.

# Semi-Clinch Trolley Ears.

For Round Wire.



THE Semi-Clinch Ear possesses some of the characteristics of both the Soldered and the Clinch Ears described on the pages preceding. The groove in this Ear is made deeper than that of the Soldered, but not as deep as that of the Clinch Ear, the lips being made to encompass slightly more than one-half of the circumference of the trolley wire. The edges of the lips are ground thin so as to offer as little obstruction as possible to the trolley wheel, and the groove of the Ear is tinned for soldering.

CODE WORD.	NO.	Length	0 Inches.			EACH.
Cajanus.	6653—Ear for No		•	56 inch	Stud	
Calamarius.	6654 '' '' ''		" " "	58 "	"	40
Cammarius.	0004	2-0		78	• • • • • • • •	40
		Length	.12 Inches.			
Calathus.	6655—Ear for No	. 0 B. & S.	Round Wire,	3/8 inch	Stud	\$ 0 44
Calatinus.	6656— " " "	0 "	44 44	3/4 "	"	48
Calcamus.	6657— '' '' ''	2-0 "	"	5/8 "	"	45
Calcaremus.	6658 " " "	2-0 "	"	3/4 "	"	49
Calcaturus.	6659— " " "	3-0 "	"	5/8 "	"	47
Calceandus.	6660— " " "	3-0 "	"	3/4 "	"	51
Calceatus.	6661 " " "	4-0 "	"	5/8 "	"	48
Calciarius.	6662 " " "	4-0 "	"	3/4 "	"	52
				, .		
		Length				
Calefiamus.	6663—Ear for No		Round Wire,		Stud	•
Calemus.	6664— " " "	0 "	"	34 "	"	57
Calfacimus.	6665— " " "	2-0 "	"	5/8 ·"		54
Calfactus.	6666— " " "	2-0 "	"	3/4 "	"	58
Calicibus.	6667— " " "	3-0 "	"	<del>5/8</del> "	"	56
Caligamus.	6668— '' '' ''	3–0 "	"	3/4 "		60
Caligineus.	6669 '' '' ''	4-0 "	"	5/8 "	"	57
Calleamus.	6670 " " "	4-0 "	"	34 "	"	61
		Length	18 Inches			
Callebimus.	6671—Ear for No	-	Round Wire,	5% inch	Stud	\$ 0 61
Callibus.	6672 " " "	. 0 b. & S.	160 411 e,	34 "		65
Calvarius.	6673 " " "	2-0 ***	"		"	63
	0010	2-0 "	"	5/8 " 3/ "	"	
Calvebamus.	0014-	2-0	66 66	74		66
Calvendus.	0010	3-0	"	<del>/</del> /8	"	64
Calveremus.	0010-	3-0	"	<del>%</del> 4		67
Calvivimus.	0011	4-0		<del>/</del> 8		65
Calyculus.	6678— '' '' ''	4-0 "	"	3/4 "	"	69

## Walker Trolley Ear.

#### Patented.

#### For Round Wire.



THE Walker Trolley Ear is designed for both straight line and curve suspension, and affords a support for the trolley wire that minimizes to the least possible degree the tendency of the trolley wheel to spark when passing under it. This is due to the fact that the lower surfaces of the Ear and trolley wire are on the same plane, and of exactly the same width, which makes a perfectly straight under-running surface. It combines all the advantageous features possessed by the ordinary styles of soldered ears and mechanical clamps, without having those that render many of them so objectionable to use. The length of the Ear is  $8\frac{1}{4}$  inches.

The trolley wire is bent to the proper curvature to conform to the shape of the Ear by a special tool, which makes it a quick and easy operation to place the Ear in position on the line. If it is necessary to change the position of the hanger on the line, the center and end lugs of the Ear can be bent back sufficiently to allow the trolley wire to be removed and straightened for replacing.

CODE WORD.	NO.										EACH.
Camarus.				0 B	. & S.	Round	Wire,	₹8	inch	Stud	\$ 0 40
Cambiremus.	6680 "		"	0	"	66	"	3/4	"	"	. 44
Cambiturus.	6681— ''		"	2–0	"	"	"	5∕8	"	"	. 43
Cambivimus.	6682 "	"	"	2–0	44	"	"	3/4	"	"	. 47
Camelarius.	6683 "		"	3–0	"	"	"	5∕8	"	"	. 46
Cameramus.	6684- "		"	3-0	"	"	"	3/4	"	"	. 49
Caminamus.	6685 "			4–0	"	4.6		5/8	"	"	. 49
Campanius.	6686— "	"	"	4–0	"	"	66	3/4	"	"	. 54
Acclinabam.	1108—F	ormin	g To	ol							. 2 30

# Spillman Trolley Ear.

#### Patented.

#### For Round Wire.



THE many objections raised to the use of soldered ears, namely, that of burning the trolley wire, the time and material consumed in soldering, the difficulty of adjusting the hanger on the wire after once in place, as well as the objection to many clamps, that of sparking when the trolley wheel passes under them, have all been overcome in the design and construction of this Ear. In placing it in position on the line, it is first screwed on to the hanger body and the trolley wire is then placed in the concave lip, a metal block being held on the back side of the Ear, and a copper hammer used to do the forming with, beginning at the center of the lip and working toward the ends. On curves the Ear should be hung so that the side strain of the trolley wire is against the web. If it is necessary to adjust the hanger, the lips can be opened sufficiently to slip the Ear along the trolley wire. The length of the Ear is 9 inches.

CODE WORD.  Accolueram.		ar fo	r No	. 0	В. &	S. Round	Wire,	5/8	inch	Stud	<b></b>	EACH. \$ 0 42
Consuaviam.	2271-	"	"	2–0	"	"	"	5∕8	ıi.	"		44
Consuendam.	2273	" "	"	3-0	"	"	"	5∕8	"	"		48
Contatam.	2305—		"	4-0	, "	"	"	5⁄8	"	"	• • • • • • •	59

# Jewell Trolley Sling.

#### For Round Wire.



THE Jewell Trolley Sling is especially adapted for trolley suspension on straight line work where a flexible suspension is a second of the suspension of the sion on straight line work where a flexible support is desired, as is the case particularly when the ordinary rigid pole bracket construction is used. The boss into which the hanger stud is threaded, is swiveled in the body of the Ear so as to admit of an oscillatory motion when the trolley wheel passes under it. This overcomes, to a large extent. the pounding effect of the trolley wheel on the insulator. In putting these on the trolley wire, the swivel bolt is first unscrewed and the boss The wire is next dropped into the groove and the lips bent over, securely holding it in place. The lug and bolt are then replaced and the Ear fastened on the hanger body. As no solder or special tools are required, this operation is a quick one, and the result is a strong, flexible support for the trolley wire, which will cause no arc when the trolley wheel passes under. The Sling is 91/4 inches long and regularly made for a 5% inch stud bolt, but can be supplied in smaller sizes to order.

CODE WORD.  Accredebam.	NO. 1113—	Sling	for	No.	. 0	В. &	S. Roune	d Wire,	5/8	inch	Stud	l	EACH. \$ 0 53
Contegebam.	2307	- "	"	"	2-0	"	"	"	5/8	"	"		53
Contemplam.	2309-	_ "	"	"	3-0	"	"	"	5/8	"	"		54
Contexeram.	2311-	_ "	"	"	4-0	"	"	44	5/8	"	"		56

# Metropolitan Trolley Ear. Straight Line Suspension, For Round Wire.



THIS Ear is made with an extra high boss, the height from lower edge of trolley wire to top of boss being 25% inches. The Ear is 18 inches in length, and as regularly made, is not tinned.

CODE WORD.	NO.													EA	CH.
Ruinam.	5647-	Ear	for	No.	. 0	B. &	S.	Round	Wire,	5/8	inch	Stud		\$	1 01
Ruminabam.	5648-	"	"	"	0	"		"	"	3/4	"	"			1 08
Rumpendam.	5649-	"	"	"	2-0	"		"	"	5/8	"	66	<b></b>	:	1 08
Runcandam.	5650	"	44	"	2-0	"		"	"	3/4	"	"			1 14
Runcatam.	5651-	. "	66	"	3-0	"		"	"	5/8	"	4.6			1 14
Runcinabam.	5652 -	_ "	"	"	3-0	"		"	"	3/4	"	"			1 21
Ruptam.	5653-	- 66	"	"	4-0	"		"	"	5/8	"	"			1 21
Ruscariam.	5654-	_ "	"	"	4-0	4.6		"	"	3/4	"	"			1 28

# Metropolitan Trolley Ear. Curve Suspension, For Round Wire.



THE central portion of this Ear is reinforced to provide ample strength to withstand the side strain of the trolley wire on curves. The length of the Ear is 15 inches, and the height between top of boss and lower edge of trolley wire is 23% inches. As regularly supplied, it is not tinned.

CODE WORD.	NO.												EA	CH.
Rusceam.	5655—I	Ear	for	No.	. 0	B. &	S.	Round	Wire,	5∕8	inch	Stud	 \$ 0	68
Ruspabam.	5656	"	"	"	0	"		"	"	3/4	"	"	 •	<b>7</b> 5
Ruspaturam.	5657	66	"	"	2-0	"		44	"	5/8	"	"		75
Ruspaveram.	5658	"	"	"	2-0	"		"	"	3/4	"	"		82
Russatam.	5659	"	"	"	3-0	66		"	"	5/8	"	"		82
Rusticatam.	5660-	"	"	"	3-0	"		"	"	3/4	"	"		88
Rutilandam.	5661	"	"	"	4-0	66		4.6	"	5/8	"	"		88
Rutilatam.	5662-	"	"	"	4-0	"		"	"	3/4	"	"		95

In ordering Ears state if the lips are desired tinned for soldering.

# Type A Trolley Ear. For Round Wire.



THE ends of this Ear are slightly enlarged to give it additional strength at these points where the greatest strain is brought to bear. It is fitted with a special form of boss, the height of which, from the under side of the trolley wire, is 15% inches. As the lips are made to almost encircle the trolley wire, no soldering is required, and the Ear as regularly made, is not tinned, but can be furnished in that way if so ordered.

CODE WORD.	NO.	Length	.12 Inches.		EACH.
Scrupeam.			Round Wire, 5%	inch Stud	
Scuticam. Scutulatam.	5755— " "	Z-U	-4/2		51 54
Sebabam.	5759 " "	" 3-0 " " 4-0 "	" " 5/8	" " "	57
		Length	.15 Inches.		
Scrutabam.	5754—Ear for	No. 0 B. & S.	Round Wire, %	inch Stud	
Scutulam.	5756— " "		" " 5/8	" "	61
Scubilitam.	5758 " "		" " 5⁄8	" "	63
Sebaturam.	5760 " "	" 4-0 "	66 66 56	66 66	67

In ordering Ears state if the lips are desired tinned for soldering.

# Soldered Trolley Ear. For Grooved Wire.



In this Ear the lips are made to conform to the shape of the trolley wire, and the groove is tinned for soldering. Two holes drilled through the web of the Ear into the groove, provide a ready means of placing solder in the latter. The length of the Ear is 12 inches.

CODE WORD.	NO.									EACH.
Liquaveram.	4033—Ear	for No	. 2-0 B	. & S.	Grooved	Wire,	5⁄8 i	nch	Stud	\$ 0 50
Axabimus.	6525— ''	"	2-0	"	"	"	3/4	"	"	54
Liqueam.	4034— ''	"	3-0	"	"	"	5/8	"	"	52
Axandus.	6526—"	"	3-0	"	"	"	3/4	"	"	56
Liquendam.	4035 "	"	4-0	"	"	"	5/8	"	"	54
Babylonius.	6527—"	"	4-0	"	4.6	"	34	"		57



# Clinch Trolley Ear. For Grooved Wire.



THIS Ear is in duplicate of the Soldered Trolley Ear (see page 167), except that it is not tinned.

CODE WORD.	NO.											EACH.
Campatibus.	6687-	Ear	for	No.	2-0	B. & S.	Grooved	Wire,	5/8	inch	Stud	\$ 0 48
Canceremus.	6688-	- "	"	"	2-0	"	"	"	3/4	"	"	52
Candebamus.												
Can de fimus.	6690	. "	"	"	3-0	"	"	"	3/4	"	"	54
Candemus.	6691-	- "	"	"	4–0	4.6	46				"	
Can deremus.	6692	"	"	"	4-0	"	"	"	3/4	"	"	55

# Soldered Trolley Ear.

For Figure 8 Wire.



In this Ear the lips conform to the shape of the trolley wire and are tinned for soldering. Two holes drilled through the web of the Ear into the groove, provide a ready means of placing solder in the latter. The length of the Ear is 10 inches.

CODE WORD.  Candidatus.	No. 6693—Ear	for	No.	0	В. &	S. Fig. 8	8 Wire,	5% in	ch Stu	d	EACH. \$ 0 55
Canemus.	6694—"	"	"	0	"	"	"	3/4	"		60
Canopicus.	6695—"					"	"	5/8 "			57
Cantabamus.	6696—"	"	"	2-0	66	"	"	3/4			61
Cantamus.	6697 ''	"	"	3–0	"	"	"	5/8			58
Cantaturus.	6698—"	"	"	3-0	"	"	"	3/4			63
Canterinus.	6699—"	"	"	4-0	"	"	"	5/8			60
Cantitamus.	6700—"	"	"	4-0	"	"	"	34 '		• • • • • • • • • • • • • • • • • • • •	64

# Clinch Trolley Ear. For Figure 8 Wire.



THIS Ear is in duplicate of the Soldered Trolley Ear illustrated, on the preceding page, except that the groove is not tinned. The Ear is fastened to the trolley wire by merely closing the lips, which are of the same configuration, over it.

## Type W Feeder Clamp.

Patented.

### For Round, Figure 8 and Grooved Wires.



The Lug is made large enough for a No. 2-0 B. & S. Feeder Wire.

_		_		_							
CODE WORD.	NO.			_		_					EACH.
Acquiescam.	1133—I	'eeder	Clamp			. 0	В. &	S. Round	Wire		\$ 0 69
Crepandam.	2378	"	"	"	"	2-0	66	"	44		70
Crepatam.	2379—	"	"	"	"	3-0	"	"	"	<b></b>	72
Crepidam.	2380-	"	"	"	"	4-0	"	. "	"	<b></b> .	74
Crepidulam.	2381—	"	"	"	"	0	"	Fig. 8	"		72
Crepueram.	2382	"	"	"	4.6	2-0	"	ñ	"		74
Cretariam.	2383-	"	44	"	"	3-0	"	"	"		76
Cribrabam.	2384—	"	"	"	"	4-0	"	4.6	"		78
Figulinam.	3078	4.6	4.6	"	"	2-0	"	Grooved	"		72
Figurandam.	3079—	66	66	"	"	3-0	"	"	"		74
Figuratam.	3080	"	"	"	"	4-0	"	"	"		76

# Soldered Feeder Ear.

#### For Round Wire.



THIS Ear is 15 inches in length, and provided with a Feeder Lug which will accommodate a No. 2-0 B. & S. Feeder Wire. The lips are tinned for soldering.

CODE WORD.	NO.												EA	CH.
Caperatus.	6705—F	eeder	Ear	for	No.	0 B	. & S.	Round	Wire,	5/8	inch	Stud.	\$ (	0 67
Capionibus.	6706—	"	"	"	"	0	66	"	"	3/4	"	"		72
Capitarius.	6707	"	"	"	"	2-0	"	"	"	5/8	"	"		68
Captabimus.	6708-	"	"	"	"	2-0	"	"	"	3/4	66	"		73
Captandus.	6709	"	"	"	"	3-0	"	4.6	66	5/8	"	"		70
Captatus.	6710-	"	4.6	"	"	3-0	"	"	"	3/4	4.6	"		75
Captibus.	6711—	"	"	66	"	4–0	"	"	44	5/8	"	"		73
Captivatus.	6712—	"	"	"	"	4-0	"	"	"	3/4	"	"		76

Ears with two Feeder Lugs, one at each end, furnished to order.

# Type D=W Feeder Clamp.

Patented.

### For Round, Figure 8 and Grooved Wires.



# Provided with a Feeder Lug which will accommodate a No. 2-0 B. & S. Feeder Wire.

CODE WORD.	NO.									EACH.
Bubsequam.	2075—F	eeder					B. &		Wire	\$ 0 66
Credebam.	2371-	"	44	"	"	2–0	"	"	"	68
Credideram.	2372-	"	"	"	"	3–0	"	"	"	70
Creditabam.	2373	"	66	"	"	4-0	"	"	"	72
Credituram.	2374-	"	4.6	"	"	0	"	Fig. 8		70
Cremabam.	2375-	"	"	"	"	2-0	"		"	72
Crematuram.	2376	"	"	"	"	3–0	"	44	"	73
Cremaveram.	2377-	"	"	"	"	4-0	"	"	"	75
Fidentiam.	3075	"	"	"	"	2-0	"	Grooved		70
Fiduciabam.	3076	"	"	"	"	3–0	"	"	"	72
Figendam.	3077—	"	"	"	"	4–0	"	"	"	73

# Clinch Feeder Ear. For Round Wire.



THIS Ear is provided with a Feeder Lug to accommodate a No. 2-0 B. & S. Feeder Wire. The length of the Ear is 15 inches, and the lips are tinned for soldering.

CODE WORD.	NO. 6713—F	eeder	Ear	for	No.	0 B	. & S.	Round	Wire,	₹8	inch	Stud	EACH. \$ 0 75
Capulandus.	6714-	"	"	"	"	0	"	"	"	3/4	4.6	"	· 79
Capulatus.	6715—	"	44	"	"	2-0	"	"	"	5/8	"	"	77
Capulemus.	6716	"	66	"	"	2–0	"	"	66	3/4	"	"	82
Capulus.	6717—	"	"	"	"	3-0	"	"	66	5/8	"	"	78
Carbasinus.	6718	"	"	"	66	3-0	"	66	"	3/4	66	"	83
Carceribus.	6719	"	"	"	"	4–0	"	"	"	5/8	"	"	80
Cardineus.	6720-	"	"	"	"	4–0	66	"	"	34	"	"	84
_			-	_								_	

Ears with two Feeder Lugs, one at each end, furnished to order.

# Type M=W Feeder Clamp.

Patented.

For Round, Figure 8 and Grooved Wires.



# Provided with a Feeder Lug which will accommodate a No. 2-0 B. & S. Feeder Wire.

		TAI	U. 4-U I	J. 6	v D.	T. C	caci	44 II C.		
CODE WORD.	NO.									EACH.
Crispulam.	2389—F	'eeder	· Clamp	for	No.	. 0	B. &	S. Round	Wire	\$ 0.75
Cristatam.	2390	"	"	"	"	2–0	"	"	"	76
Criticam.	2391-	"	44	"	"	3-0	66	"	"	79
Crocitabam.	2392-	46	"	"	"	4-0	66	"	"	. 80
Crocituram.	2393	"	"	"	"	Ō	"	Fig. 8	"	79
Crociveram.	2394-	"	"	66	"	2-0	"	%·	"	90
Crocotam.	2395	"	66	"	"	3-0	"	4.6	"	82
Cruciabam.	2396	"	66	"	"	4-0	"	66	"	84
Fingam.	3084—	66	66	66	"	2-0	4.6	Grooved		79
Fingebam.	3085-	66	66	"	"	3-ŏ	66	"	"	80
Finitivam.	3086	"	"	"	"	4-0	"	"	"	82

## Semi-Clinch Feeder Ear.

### For Round Wire.



THIS Ear is 15 inches in length and provided with a Feeder Lug which will accommodate a No. 2-0 B. & S. Feeder Wire. The lips are tinned for soldering.

CODE WORD.	NO.												EACH.
Cardiacus.	6721 - 1	Feeder	Ear	for	No.	. 01	B. & S	. Round	Wire,	5/8	inch	Stud	\$ 0 69
Caremus.	6722 -	"	"	66	"	0	"	"	"	3/4	"	"	73
Caribus.	6723	"	"	"	"	2-0	44	"	4.6	5/8	"	"	70
Carinandus.	6724	"	"		"	2.0	"	"	"	34	"	"	74
Carinatus.	6725	"	"	"	"	3-0	"	"	"	5/8	"	"	73
Carpendus.	6726	4.6	"	"	"	3 -0	4.6	4.6	"	3/4	"	"	76
Caruimus.	6727	"	"	66	"	4 0	"	"	"	5/8	"	"	74
Carpimus.	6728	"	"	"	"	4−0	"	"	"	3/4	"	"	77

### Walker Feeder Ear.

#### Patented.

### For Round Wire.



THE Walker Feeder Ear is in duplicate of the regular form illustrated on page 163, with the exception of the Feeder Lug, which is for a No. 2-0 B. & S. Wire.

CODE WORD.	NO.												EACH.
Brutescam.	2072—I	eeder	Ear	for	No	. 0B	. & S.	Round	Wire,	5/8	inch	Stud	\$ 0 60
Casabamus.	6729	"	"	"	"	0	"	"	"	3/4	"	"	64
Cujuspiam.	2411-	"	"	"	"	2-0	"	"	"	5/8	"	"	62
Casaremus.	6730	"	"	"	"	2-0	4.4	"	"	3/4	"	"	66
Culpaveram.	2413-	66	"	"	"	3-0	"	4.6	"	5/8	"	"	64
Casavimus.	6731—	66	"	"	"	3-0	"	4.6	"	3/4	"	"	67
Cultrariam.	2415	"	"	66	"	4-0	"	66	66	5/8	"	"	65
Caspianus.	6732	"	"	"	"	4-0	"	"	"	3/4	66	"	69
Acclinabam.	1108—I	ormin	g T	ool.						٠.,			2 30

Ears with two Feeder Lugs, one at each end, furnished to order.

# Detroit Feeder Clamp.

### For Round, Figure 8 and Grooved Wires.

Form 1.



THE Detroit Feeder Clamp, Form 1, shown in the above illustration, is identical with the corresponding type of clamp in bronze metal listed on page 153, with the one exception of an addition in the way of a Feeder Lug which will accommodate a No. 2-0 B. & S. Wire.

#### For 5/8 inch Stud Bolt.

CODE WORD.	NO.		a.				_					EACH.
Litaniam.	4036—F	eeder	Clamp	for	No.	. 0	В.	& S.	Round	Wire	)	<b>\$</b> 0 55
Litigandam.	4037	"	"	"	"	2-0		"	"	"		57
Litigatam.	4038—	"	"	"	"	3-0		"		"		60
Litteram.	4039—	"	"	"	"	4-0		"	"	"		61
Liturabam.	4040-	"	"	"	"	0		"	Fig. 8	"		57
Livendam.	4041	"	"	"	"	2-0		"	"	"		57
Lividabam.	4042	"	"	"	"	3-0		"	"	4.6		60
Lividinam.	4043	"	"	"	"	4-0		"	"	"		60
Locandam.	4044—	"	44	"	"	2-0		" (	Grooved	l "		60
Locatariam.	4045-	"	"	"	"	3–0		"	"	"		60
Locita bam.	4046	"	"	"	"	4-0		"	"	"		60

## Detroit Feeder Clamp.

### For Round, Figure 8 and Grooved Wires.

Form 3.



THE Form 3 Detroit Feeder Clamp is made in bronze metal for the various styles of wire indicated above. With the exception of being made with a Feeder Lug to take a No. 2-0 B. & S. Wire, it is in duplicate in every respect of the Form 3 Clamp shown on pages 155 and 156.

For 5/8 and 3/4 inch Stud Bolts.

CODE WORD.	NO.												1	EACH.
Locustam.	4047—F	eeder	Clamp	for	·No.	0 B	. & S	. Round	Wire,	5/8	'n.	Stud.	. \$	0 86
Cassabimus.	6733—	"	"	"	"	0	44	"	"		"	44		91
Longinquam.	4048	"	"	"	" 2	-0	"	44	"	5/8	"	".		87
Cassandus.	6734-	"	"	"	" 2	-0	"	"	"	3/4		".		92
Longiscam.	4049	"	"	"	" 3	-0	"	44 ,	"	5/8	"	".		89
Cassatus.	6735	"	"	"	" 3	-0	"	"	"		"	".		94
Loquentiam.	4050	4.4	"	"	" 4	-0	"	"	"	5/8	"	".		91
Cassemus.	6736-	44	"	"	"4	-0	44	"	"	3/4	"	".		97
Lorica bam.	4051	"	44	"	"	0	"	Fig. 8	44		"	".		84
Castibus.	6737-	44	"	"	"	0	"	ii.	44	3/4	"	".		89
Loriolam.	4052—	44	"	44	" 2	-0	"	"	"	5/8	"	".		84
Castramus.	6738	"	4.6	"	" 2	-0	"	"	"		"	".		89
Lubentiam.	4053	"	44	44	" 3	-0	"	66	"	5/8	"	".		86
Casualibus.	6739	"	"	"	" 3	-0	"	"	"		"	".		91
Lucanam.	4054	"	"	"	"4	-0	"	44	"		"	".		86
Caulibus.	6740	"	"	"	" 4	-0	"	44	"	3/4	66	"		91
Luceam.	4055	"	"	"	" 2	-0	"	Grooved	66	5/8	"	".		84
Caunitibus.	6741	"	"	"	" 2	-0	"	"	"	3/4		".		89
Lucernam.	4056	"	"	"	" 3	-0	"	"	"		"	".		84
Causativus.	6742	"	"	"	" 3	-0	"	"	"	3/4	"	".		89
Lucernulam.	4057	"	"	"	"4	-0	"	"	"	5/8		".		84
Causaturus.	6743	"	"	"	" 4	-0	"	46	"		"	".		89

# Spillman Feeder Ear.

#### Patented.

#### For Round Wire.



THIS is an adaptation of the Straight Line Form (see page 164) made with a Feeder Lug for a No. 2-0 B. & S. Wire. It is 9 inches in length.

CODE WORD. Cubicam.	NO. 2403—F	'eeder	Ear	for	No	٠.	0 B	. & S.	Round	Wire,	<del>5/8</del>	inch	Stud	EACH. \$ 0 60
Cubueram.	2405	46	"	"	"	2-	0	"	"	"	5∕8	"	"	64
Cuculatam.	2407—	"	"	"	"	3-	0	"	"	"	<del>5</del> ⁄8	"	"	67
Cujanam.	2409—	"	"	"	"	4	0	"	44	"	5/8	44	"	72

# Type A Feeder Ear. For Round Wire.



THE Type A Feeder Ear is 15 inches in length, and provided with a Feeder Lug to take a No. 2-0 B. & S. Wire. The lips are tinned for soldering.

CODE WORD. Secturam.	NO. 5765—	Feeder	Ear	for	No		0	В. &	: S.	Round	Wire,	5∕8	inch	Stu	d	EACH \$ 0.7	
Secueram.	<b>5766</b> —	- 44	"	"	"	2-	0	"		"	"	5/8	"	"		8	30
Secundatam.	5767-	"	4.6	"	"	3-	0	66		"	"	5/8	"	"		8	32
Sedeam.	5768-	. "	"	"	"	4-	-0	6	•	"	"	5/8	"	"		8	35

Ears with two Feeder Lugs, one at each end, furnished to order.



### Soldered Feeder Ear.

#### For Grooved Wire.



THIS Ear is in duplicate of the Soldered Trolley Ear shown on page 167, with the addition of a Feeder Lug to take a No. 2-0 B. & S. Feeder Wire.

CODE WORD. Filicatam.	no. 3081—F	'eedei	r Ear	for	No	. 2-0 B	. & S.	Grooved	Wire,	5/8	inch	Stud	 EACH. \$ 0 68
Cavissemus.	6744	"	"	"	"	2-0	"	"	"	3/4	"	"	 73
Fimbriatam.	3082							"	"	5/8	"	"	 70
Cecidimus.	6745 -	"	. "	"	66	3-0	"	"	"	¾	"	"	 75
Findendam.	3083	"	"	"	"	4-0	"	"	"	5/8	"	"	 72
Cedendus.	6746	"	"	"	"	4-0	"	"	"	¾	"	"	 76

### Soldered Feeder Ear.

### For Figure 8 Wire.

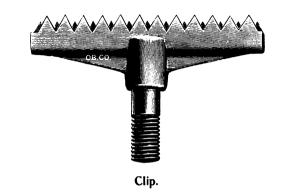


THIS is a modification of the Soldered Trolley Ear (see page 168), furnished with a Feeder Lug to take a No. 2-0 B. & S. Wire. As regularly supplied, it is tinned for soldering.

CODE WORD.  Lucescam.	NO. 4058—F	eedei	· Ear	for	No.	0 B	. & S	. Fig.	8 Wire	. 5/8	inch	Stud	i	EACH. \$ 0 60
Cedridibus.	6747	66	"	"	"	0	"	4.6	44	3/4	"	"		64
Lucidam.	4059	"	"	"	"	2-0	"	"	44	5/8	"	"		62
Cedrinus.	6748 -	"	"	"	"	2–0	"	"	"	3/4	"	"		66
Luciferam.	4060-	"	"	66	"	3-0	"	"	"	5∕8	"	"		64
Celabamus.	6749	66				3–0	"	"	"	3/4	"	66		67
Lucraturam.	4061	"	"	"	"	4-0	"	"	"	5/8	"	"	٠.	65
Celamus.	6750	"	44	"	"	4-0	"	"	"	3/4	"	"		69

Ears with two Feeder Lugs, one at each end, furnished to order.

# Feed In Suspensions.





Suspender.

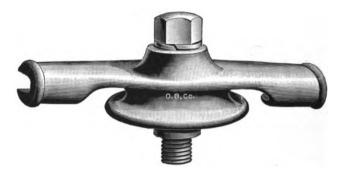
THE devices illustrated herewith are for feeding the trolley when feeder wire is used as the suspension wire. Can be used with soldered ears or mechanical clamps as desired. They are made of heavy bronze castings, and provided with 5% inch stud bolts. The groove of the Clip is tinned for soldering to the suspension wire.

CODE WORD.  Actitabam.	No. 1136Clip for Nos. 0 & 2-0 B. & S. Feeder Wire	EACH. \$ 0 31
Cupellam.	2426— " " " 3-0 " 4-0 " " "	33
Cupidam.	2427—Suspender for Nos. 0 & 2-0 B. & S. Feeder Wire	42
Curioniam.	2428— " " " 3-0 " 4-0 " " "	58

In ordering Clips and Suspenders state the diameter and number of threads to the inch of Suspension Stud required, if different from standard.



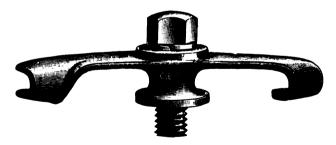
## Grover Feed In Hanger.



THIS consists of a bronze hanger body arranged for cross-suspension, and so machined as to make a neat fit for a 5% or 34 inch machine bolt, to the threaded end of which is attached the trolley ear or clamp. It may be used with wire or cable of 3% inch diameter or less.

CODE WORD.	NO.	EACH.
Cumanam.	2417—Feed In Hanger, % inch Stud	\$ 1 17
Consuendus.	6973— " " " ¾ " "	1 17

## Syracuse Feed In Yoke.



THIS is made of bronze metal and the inside of the end lips is tinned, so that if desired, it can be soldered to the suspension wire. It is intended for use with wire or cable of  $_{\mathbf{I}}^{\mathbf{I}}_{\mathbf{S}}$  inch diameter or less. The stud bolt is fitted with a lock washer to prevent it from unthreading.

CODE WORD.	NO.	EACH.
Fuscaveram.	3197—Feed In Yoke, 1/8 inch Stud	\$ 0 58
Consultus.	6974— " " " ¾ " "	58

# Type N Feed In Hanger.



THIS Hanger is for a feed in suspension, and is made entirely of bronze metal with the exception of the steel stud bolt, which, passing entirely through the Hanger, threads into the ear or clamp with which it is used. The bolt is prevented from unthreading by a lock washer placed under its head, as shown above. In general form and size it resembles the Type N Straight Line Hanger described on page 124.

CODE WORD.	NO.	EACH.
Luctuosam.	4066—Feed In Hanger, % inch Stud	. \$ 1 38
Assumptus.	6458— " " " 3⁄ " "	. 138

# Type J Feed In Hanger.



THE Feed In Hanger shown above resembles in general form the Type J Straight Line Hanger illustrated on page 132, and differs from it only in being made entirely of bronze metal, with the exception of the projecting steel stud. The latter is threaded to fit standard forms of ears and clamps.

CODE WORD.	NO.	EACH.
Sciveram.	5746—Feed In Hanger, % inch Stud	<b>\$</b> 1 50

### Soldered Double Strain Ear.

### For Round Wire.



This Ear is 15 inches long, and the lips are tinned for soldering.

CODE WORD. Celaremus.	NO. 6751—S	train	Ear	for	No.	0	B. & S.	Round	Wire,	5/8	inch	Stud	EACH. \$ 0 78
Celerandus.	6752-	"	"	66	"	0	"	4.6	"	3/4	"	"	82
Celeratus.	6753-	44	"		"			"	"	5∕8	"	"	79
Celeribus.	6754-	"	"	"	"	2–0	"	44	"	3/4	"	"	84
Celitibus.	6755 -	"	"	"	"	3–0	6.6	"	"	5/8	"	"	81
Censebamus.	6756-	"	"	"	"	3–0	"	66	"	3/4	"	"	86
Censendus.	6757 -	"	"	44	"	4-0	"	"	"	5/8	"	"	84
Censiturus.	6758	"	4.6	"	"	<b>4</b> –0	"	"	"	¾	4.6	"	87

# Clinch Double Strain Ear.





The length of this Ear is 15 inches, and the lips are tinned for soldering.

CODE WORD.	NO.												EACH.
Censuimus.	6759—S	train	Ear	for	No.	. 0	B. & S.	Round	Wire,	5/8	inch	Stud.	. \$ 0 84
Centrosus.	6760-	"	"	"	44	0	"	"	"	3/4	"	".	. 88
Cerandus.	6761-	"	"	"	"	2-0	"	"	"	5/8	"	".	. 86
Ceratus.	6762	"	"	"	"	2-0	"	"	"	3/4	"	".	. 90
Cerealibus.	6763	"	"	44	"	3-0	"	"	"	5/8	"	".	. 87
Cernuamus.	6764	"	"	"	"	3–0	"	"	"	3/4	"	".	. 91
Cernulatus.	6765-	"	"	"	"	4-0	4.6	44	46	5/8	"	".	. 89
Cernule mus.	6766	"	"	"	"	4-0	"	44	"	3/4	"	".	. 92

# Clinch Anchor Ear. For Round Wire.



This Ear is 8 inches in length, and the lips are tinned for soldering.

CODE WORD.  Lunaturam.		Anchor	Ear	for	No.	0	B. &	S	Round	Wire	EACH.
Lunaveram.											•
Lurcabam.	4076—	. "	"	"	"	3-0	"		"	44	 61
Lurcaturam.	4077-	. "	"	"	"	4-0	4.6		"	44	 66

## Semi=Clinch Double Strain Ear.

For Round Wire.



The length of this Ear is 15 inches and the lips are tinned for soldering.

CODE WORD.	NO.													EACH.
Certabamus.	6767—S	train	Ear	for	No.	0 B.	& S.	Round	Wire,	5∕8	inch	Stud	l	\$ 0 81
Certeremus.	6768—	"	"	"	"	0	"	"	"	3⁄4	"	"		86
Certaturus.	6769—	"	"	"	" 2	-0	"	"	"	5∕8	"	"		82
Certavimus.	6770—	"	"	"	" 2	-0	"	"	"	¾	"	"		87
Cerycibus.	6771—	"	"	"	" 3	-0	"	"	"	5⁄8	"	"		84
Cessavimus.	6772—	"	"	"	" 3	-0	"	"	• •	3/4	"	"		88
Cessimus.	6773—	"	"	"	" 4	-0	"	"	"	5∕8	"	"		86
Cessitius.	6774—	"	"	"	" 4	-0	"	"	"	3⁄4	"	"		90

## Metropolitan Strain Plate and Ear.

### For Round and Figure 8 Wires.



THE Strain Plate consists of a malleable iron casting which is intended to be supported from a straight line hanger, the hole in the center being tapped to fit a 5% or 34 inch stud bolt, as specified. A 3% inch hole is drilled in each corner of the Plate for attaching the guy wires. The Clinch Ear for Round Wire listed below is 13½ inches in length and resembles that illustrated on page 161, with the exception of being tinned and furnished with two bosses. The Clinch Ear for Figure 8 Wire, which is similar in length and general design to Nos. 2349–2355 on page 169, is also tinned.

CODE WORD.	NO.											EACH.
Dataveram.		trai	n Plate,	Mall	. Iron	, Galv	., fo	r 5/8	inch	Hangei	Stud.	
Cestrotus.	6775	"	"	"	"	"	"	3/4	"	"	".	 84
Dativam.	2443—	"	4.6	44	"	Jap.	, "	5/8	"	"	".	 78
Cetosus.	6776—	"	"	"	"	"	"	3/4	"	"	".	 78
Daturam.	2444— F	Ear,	Clinch,	for	No.	0 B. &	ž S.	Rou	nd '	Wire		 1 05
Dauniam.	2445	"	"	"	" 2-	0 "	•	"		"		 1 08
Dealbabam.	2446—	"	"	"	" 3-	0 "	•	"		"		 1 11
Deamabam.	2447	"	"	"	" 4-	-0 '	4	"		"	. <b></b>	 1 14
Ceventibus.	6777—	"	"	"	"	0 "		Fig.	. 8	"	· • • • • •	 81
Chalabamus.	6778—	"	"	"	" 2·	-0 "		"		"	<b></b> .	 85
Chalaturus.	6779	"	"	"	" 3-	-0 "	•	"		"		 89
Chalceus.	6780-	"	"	"	" 4	-0 '	4	"		"		 92

# Metropolitan Strain Plate and Clamps.

### For Figure 8 and Grooved Wires.



THE Strain Plate illustrated above is in duplicate of that shown on the opposite page, and the Clamps are the Detroit Form 1, listed on page 153.

CODE WORD.  Dataveram.	NO. 2442—	Strain	Plate,	Mall.	Iron,	Galv.	, for	· 5⁄8	inch	Hanger	Stud	1	<b>EACH.</b> \$ 0 84
Cestrotus.	6775	"	"	"	"	"	"	3/4	"	"	"		84
Dativam.	2443	"	"	"	"	Jap.,	"	5/8	"	"	"		78
Cetosus.	6776—	"	"	"	"	"	"	3/4	"	"	"		78
Foed and am.	3127—	Clamp	, Mall.	Iron,	Galv.	, for N	lo.	0 1	B. & S	S. Fig. 8	Wire	э	23
Foedatam.	3128-	. "	"	"	"	" "	' <b>2</b> -	-0	"	"	"		23
Foliosam.	3129-	"	"	"	"	" "	' 3-	-0	. 44	"	"		24
Folligenam.	3130-		44	"	"	" "	' 4-	0	"	"	"		24
Fetabam.	3064—		"	"	"	" "	<b>' 2</b> -	-0	"	Groove	d "		24
Fetousam.	3066-		"	"	"	" "	' 3-	-0	"	"	"		24
Fibulandam.	3068		"	"	"	" "	<b>'</b> 4-	-0	"	"	"		24

In ordering Strain Plates and Clamps note that two Clamps are required for each Strain Plate.



# Type A Double Strain Ear.

#### For Round Wire.



The length of this Ear is 15 inches and the lips are tinned for soldering.

CODE WORD.	NO.														EAC	H.
Sebaveram.	5761-	Strain	Ear	for	No	. (	B.	& S.	Round	Wire,	5∕8	inch	Stu	fr	\$ 0	80
Secandam.	5762-	_ "	"	"	"	2-4	)	"	"	"	5/8	44	• 6 6			84
Seclusam.	5763-	_ "	"	44	"	3-6	)	"	44	"	5∕8	"	"			86
Sectariam.	<b>5764</b> –	_ "	"	"	"	4-1	)	"	"	"	5/8	"	"			94

# Soldered Double Strain Ear.

#### For Grooved Wire.



THIS Ear is 15 inches in length and the lips are made to accurately fit the upper section of the trolley wire. It is furnished tinned for soldering.

CODE WORD.	NO.				•								EACH.
Lucubratam.	4067—S	train	Ear	for	No.	2-0 B	. & S.	Grooved	Wire,	% i	n.	Stud	\$ 0 72
Chaly bibus.	6781—	"	"	"	44	2-0	"	44	"	3/4	4 6	"	77
Lucumonam.	4068—	"	66	"	"	3–0	"	"	"	5/8	"	"	75
Chanebus.	6782-	"	"	"	"	3-0	"	"	"	3/4	"	"	79
Ludebam.	4069—	"	"	"	"	4-0	44	"	"	5⁄8	"	"	76
Characatus.	6783—	"	"	"	"	4-0	"	44	"	3/4	"	"	81

# Detroit Double Strain Clamp.

### For Figure 8 and Grooved Wires.

### Form 3.



#### For 5/8 inch Stud Bolt.

			70 111011							
CODE WORD.	NO.									EACH.
Decoctam.	2474—C	lamj	p, Bronze Metal,	for	No.	0 B	. &	S. Fig. 8 V	Vire	 \$ 0 89
Formianam.	3135	"	Mall. Iron, Galv.,	66	"	0	"	"	"	 43
Decolandam.	2475-	"	Bronze Metal, ,	"	"	2-0	"	"	"	 89
Formicabam.	3136—	"	Mall. Iron, Galv.,	"	"	2-0	"	"	"	 43
Decolatam.	2476-	"	Bronze Metal,	"	"	3-0	"	4.6	"	 91
Formidatam.	3137	"	Mall. Iron, Galv.,	"	"	3-0	"	44	"	 44
Decollabam.	2477-	"	Bronze Metal,	"	"	4-0	66	4.6	"	 91
Fortescam.	3138	"	Mall. Iron, Galv.,	"	44	4-0	"	4.6	"	 44
Finxeram.	3087	"	Bronze Metal,	"	"	2-0	"	Grooved	"	 92
Firmabam.	3088	"	Mall. Iron, Galv.,	"	66	2-0	"	"	"	 43
Firmaturam.	3089		Bronze Metal,	"	"	3-0	"	"	"	 92
Firmaveram.	3090-	"	Mall. Iron, Galv.,	"	"	3-0	"	"	"	 43
Fistucabam.	3091		Bronze Metal,	"	"	4-0	"	"	"	 92
Fixuram.	3092	"	Mall. Iron, Galv.,	"	4.6	4-0	"	"	"	 43

### For 3/4 inch Stud Bolt.

Charaxamus.	6784Cl	lam	p, Bronze Metal,	for	No	. 0	В. & S	S. Fig. 8	Wire	 \$ 0	95
Charitibus.	6785	"	Mall. Iron, Galv.,	"	"	0	"	-7.6	"		46
Charteus.	6786	66	Bronze Metal,	"	"	2-0	"	"	"		95
Chelebus.	6787—	"	Mall. Iron, Galv.,	"	"	2-0	"	44	"		46
Chilonibus.	6788	"	Bronze Metal,	"	"	3-0	"	"	"		96
Chirurgus.	6789	"	Mall. Iron, Galv.,	"	"	3-0	44	46	66		46
Choragus.	6790-	66	Bronze Metal,	"	"	4-0	"	"	44		96
Chronicus.	6791	"	Mall. Iron, Galv.,	"	"	4-0	44	6.6	"		46
Cibalibus.	6792-	"	Bronze Metal,	4.6	66	2-0	66	Grooved	۱"		97
Cibamus.	6793-	"	Mall. Iron, Galv.,	"	"	2-0	"	"	"		46
Cibaturus.	6794	"	Bronze Metal,	44	"	3-0	"	"	"		97
Cibarius.	6795	"	Mall. Iron, Galv.,	"	"	3–0	"	"	"		46
Cibavimus.	6796—	"	Bronze Metal,	"	44	4-0	66	4.6	"		97
Cicinus.	6797—	"	Mall. Iron, Galv.,	"	"	4-0	66	4.6	"		46

# Detroit Anchor Clamp.

### For Figure 8 and Grooved Wires.



A modification of the bronze Detroit Double Strain Clamp, Form 3, 8 inches in length, intended for light strains.

CODE WORD.  Lurcaveram.	NO. 4078— A	nchor									
Luscam.	4079—	"	"	"	4.6	2–0	"	46	"		79
Lusitabam.											81
Lustrabam.	4081	"						"	"		81
Luxuriabam.	4082-	"	"	"	"	2–0	"	Groove	d "		78
Lyabam.	4083	"	"			-		"	"	· · · · · · · · · · · · · · · · · · ·	78
Lyaturam.	4084	"	"	"	4.6	4–0	"	"	"		78

### Soldered Double Strain Ear.

For Figure 8 Wire.



THIS is a modification of the Soldered Trolley Ear (see page 168), made in the double strain form. The length of the Ear is 15 inches, and the groove is tinned for soldering.

CODE WORD. Cicuramus.	NO. 6798—S	Strain	Ear	for	No.	. 0	B. & S.	Fig. 8	8 Wire,	5/8	inch	Stud	EACH. \$ 0 76
Cilicibus.	6799	"	"	"	"	0	46	"	"	3/4	"	"	78
Cillendus.	6800	"	"	. "	"	2–0	66	"	"	5∕8	"	"	77
Cillimus.	<b>6801</b>	"	"	"	"	2-0	66	"	"	3/4	"	"	81
Cilonibus.	6802	"	46	"	66	3-0	"	"	44	5/8	"	"	81
Cimic and us.	6803-	"	"	"	44	3–0	6.6	"	"	3/4	"	"	85
Cimicatus.	6804	"	"	44	"	4–0	66	6.6	44	5∕8	"	"	84
Cimicemus.	6805	"	"	44	"	4-0	"	"	"	3/4	"	"	88

# Soldered Anchor Ear. For Figure 8 Wire.



THIS Ear is fastened to the trolley wire by clinching the lips firmly over the upper part of the wire and soldering the latter in place. The length of the Ear is 8 inches, and the lips are tinned for soldering.

CODE WORD.  Lymphabam.	4087—A	nchor	Ear	for	No	. 0	В. &	: S.	Fig.	8 Wir	e	EACH. \$ 0 56
Lymphaceam.	4088	66	"	44	"	2-0	"		7.	"		60
Macerandam.	4089	66	"	44	"	3-0	"		"	"		62
Machaoniam.	4090-	66	"	"	"	4-0	"		"	"		66

### Swiveled Strain Yokes.



Nos. 4086 and 6807.

THE Swiveled Strain Yokes are used in combination with the various styles of clamps and ears for guying and strain purposes, being attached to their boss by a stud bolt either 5% or 34 of an inch in diameter, which passes through a central opening in the Yokes. As the price list below shows, they are made for either two or four wires, which may be insulated by means of Premier Strain or similar Insulators. The Yokes as regularly furnished are made of malleable iron, galvanized.

CODE WORD.	NO.											EAG	CH.
Ly averam.	4085—S	train	Yoke	for 2	2 wires	5/8	inch	Stud	l. <b></b>	 	 	 \$ 0	30
Cimolius.	6806		66	4	4	3/4	"	"		 . <b></b> .	 		33
	4086-					5/8	"	"		 	 <b></b>		45
Cinaribus.	6807-	"	"	" 4	l "	3/4	"	"		 	 <b>.</b>		47

# Soldered Splicing Ears.

## For Round and Grooved Wires.



Nos. 2486-6827.

The length of these Ears is 15 inches and the lips are tinned for soldering.

#### Without Set Screws.

CODE WORD.	NO.													EAC	н.
Decondam.	2478—S	plicing	Ear	for	No.	0	B. &.	S. Round	Wire,	5∕8	inch	Stu	d	\$ 1	13
Cinctibus.	6808	"	"	"	"	0	"	44	"	3/4	"	66		1 1	19
Decoque bam.	2480	"	"	"	"	2-0	"	44	44	5/8	"	"		1 1	15
Cincturus.	6809—	"	"	"	"	2–0	"	"	"	3/4	"	"		1 2	21
Decremabam.	2482	"	"	"	"	3–0	"	"	"	5/8	"	"		1 1	17
Cinerariu <b>s.</b>	6810-	"	"	"	"	3–0	"	"	"	¾	"	"		1 2	23
Decreveram.	2484—	"	44	"	"	4–0	"	"	"	5∕8	"	"		1 1	19
Cinericius.	6811—	"	"	"	"	4–0	"	"	"	3/4	"	"		1 2	24
Cingulus.	6812	"	"	"	"	2-0	"	Grooved	"	5∕8	"	"		1 1	15
Cinnameus.	<b>6813</b> —	"	"	"	"	2–0	"	"	66	3/4	"	"		1 2	21
Cinnanus.	<b>6814</b> —	"	"	"	"	3-0	"	"	"	5∕8	"	66		1 1	۱7
Circinamus.	<b>6815</b> —	"	"	"	"	3–0	"	"	"	3/4	"	"		1 2	23
Cisthu <b>s</b> .	<b>6816</b> —	"	"	"	" .	4–0	"	"	"	5∕8	"	"		1 1	19
Citabimus.	6817	"	"	"	"	4–0	66	"	"	¾	"	"		1 2	24

#### With Set Screws.

Deculcabam.	2486Sp	licing	Ear	for	No.	. 0	B. & S.	Round	Wire,	5∕8	inch	Stu	d	\$ 1	28
Citandus.	6818	44	"	"	"	0	"	"	66	3/4	"	"		1	33
Decuriam.	2488	"	"	"	"	2-0	66	"	"	5∕8	"	"		1	29
Citemus.	6819	"	"	66	"	2-0	44	"	44	3/4	"	"		1	34
Decussabam.	2490—	"	"	46	46	3–0	"	44	"	5∕8	"	"		1	31
Citratus.	6820	"	"	"	"	3–0	"	"	"	3/4	"	"		1	36
Dedicabam.	2492	"	"	"	"	4-0	"	"	"	5∕8	"	"		1	33
Cladibus.	6821—	"	"	"	"	4-0	4.6	"	"	3/4	"	"		1	38
Clamabamus.	6822	"	"	44	"	2-0	"	Groove	d "	5/8	"	"		1	29
Clamaremus.	6823	"	"	"	"	2-0	"	"	"	3/4	"	"		1	34
Clamaturus.	6824—	"	"	"	"	3-0	"	"	"	5∕8	"	"		1	31
Clarigamus.	6825	"	"	"	"	3-0	66	44	44	3/4	"	"		1	36
Clariturus.	6826—	"	"	"	"	4-0	"	"	44	5/8	"	"		1	33
Classibus.	6827—	66	"	"	"	4-0	"	"	"	34	"	"	••	1	38

# Clinch Splicing Ears.

### For Round and Grooved Wires.



Nos. 6835-6848.

These Ears are 15 inches in length, and the lips are tinned for soldering.

#### Without Set Screws.

CODE WORD.	NO.												EA	CH.
Dedititiam.	2494—5	Splicing	Ear	for	No	. 0	B. & S	S. Round	Wire,	5/8	inch	Stud	\$ 1	17
Clathramus.	6828	"	"	"	"	0	66	"	"	3/4	"	",	1	21
Dedocebam.	2496—	"	"	"	"	2–0	"	"	"	5/8	"	"	1	18
Clematibus.	6829-	"	"	"	"	2–0	"	46	"	3/4	"	"	1	23
Dedocueram.	2498—	66	"	"	"	3–0	"	66	"	5/8	"	"	1	19
Clepsimus.	6830	"	"	"	"	3–0	"	44	"	3/4	"	"	1	24
Dedoleam.	2500-	"	"	"	"	4–0	"	"	"	5∕8	"	"	1	20
Clepturus.	6831	"	"	"	"	4-0	"	44	"	3/4	"	"	1	26
Flabam.	3093	"	"	"	"	2–0	"	Grooved	l "	5/8	"	"	1	18
Clericatus.	6832-	66	"	"	"	2-0	"	44	"	3/4	"	"	1	23
Flaccidam.	3095	"	"	"	"	3-0	"	"	**	5/8	"	"	1	19
Climacibus.	6833	"	"	"	"	3–0	"	"	"	3/4	"	"	1	24
Flagrandam.	3097-	"	"	"	"	4–0	"	44	"	5/8	"	"	1	20
Clinicebus.	<b>6834</b> —	"	"	"	"	4-0	"	"	"	3/4	"	"	1	26

#### With Set Screws.

Cloderemus.	6835-	Splicing	Ear	for	No	. 0	B. & S	S. Round	Wire,	5/8	inch	Stud.	. \$	1	30
Clodicamus.	6836	• "	"	"	"	0	"	"	"	3/4	"	".		1	35
Closurus.	6837	"	"	"	"	2-0	"	66	"	5/8	"	".		1	32
Clunibus.	6838	"	44	"	"	2–0	"	"	"	3/4	46	" .		1	36
Cluniculus.	6839		"	"	"	3–0	"	"	"	5/8	"	".		1	33
Clusaribus.	6840-	"	"	"	"	3–0	"	4.6	"	3/4	"	".		1	38
Clusinus.	6841	"	"	"	"	4-0	"	"	"	5∕8	"	" .		1	35
Cnidibus.	6842	"	"	"	"	4–0	"	44	"	3/4	"	" .		1	41
Coactibus.	6843-	"	"	"	"	2–0	"	Grooved	l "	5/8	"	".		1	32
Coacuimus.	6844	"	"	"	"	2–0	"	4.6	"	34	"	".		1	36
Coadunamus.	6845-	. "	"	"	"	3–0	"	66	"	5∕8	"	".		1	33
Coagitamus.	6846-	"	"	"	"	3-0	"	"	"	3/4	"	".		1	38
Coagulamus.	6847	44		"	"	4-0	"	"	"	5/8	"	".		1	35
Coaluimus.	6848		"	"	"	4–0	"	66	"	3/4	"	" .		1	41

## Type A Splicing Ear.

#### For Round Wire.



In this Ear the ends of the wire are firmly held in place by means of set screws, as shown in the above cut, after which the lips at each end of the Ear are bent under the trolley wire, securely holding the latter in place. The length of the Ear is 21 inches.

CODE WORD.	NO.											,	EA	CH.	
Segnescam.	<b>5769</b> —	Splicing	Ear	for	No	. 0	B. & S.	Round	Wire,	5⁄8 i	nch	Stud	\$ 1	1 20	
Segregabam.	5770-	. "	"	"	"	2-0	"	"	"	5/8	"	"	1	1 23	
Sejugatam.	5771 -	- "	44	"	"	3–0	66	"	"	5∕8	"	"		1 27	
Selegeram.	5772-	. "	"	"	"	4-0	44	"	"	5/8	66	"	7	1 29	

In ordering Ears state if the lips are desired tinned for soldering.

# Soldered Splicing Ear.

For Grooved Wire.



In this form of Splicing Ear the ends of the trolley wire are brought through the hollow ends of the Ear and soldered in place. The Ear is 15 inches in length and the hollow ends are tinned for soldering.

CODE WORD.	NO.	. 1: . :	. 17	<b>6</b>	<b>3</b> 7.	0.00		G	177	-/	•	C1 1		EAC	
Florituram.	9112 SI							Grooved	w ire,	₹8	ın.	Stua.	•	ÐТ	21
Coapt and us.	6849-					2–0			"	3/4	"	" .		1	27
Florueram.	3113	**					"	"	"	5/8	"	".		1	26
Coaptemus.	6850	"				J-0	"	"	"	3/4	"	".		1	29
Fluctabam.	3114—	"				4-0	"	"	"	5/8	"	".		1	29
Coarguimus.	6851-	"	"	"	"	4-0	"	"	"	3/4	"	".		1	<b>32</b>

# Riveted Splicing Ear.

Patented.
For Figure 8 Wire.



THE Splicing Ear illustrated above is 12 inches long, and practically in duplicate of the Trolley Wire Splicer shown below, with the addition of a boss for supporting it from a trolley wire hanger. It can be soldered if desired.

CODE WORD. Rutilescam.	NO. 5663—S	plicing	Ear	for	No "'	. 01	B. & S.	. Fig. 8	Wire,	5/8 3/	inch	Stud	EACH. \$ 0 99 1 04
Coassandus.	6852—	66	66	"	"	20	"	66	"	74	44	"	
Saburrabam.	5664-					2-0				5/8	"	"	1 01
Coassatus.	6853	"	"	"	"	2–0	"	"	"	3/4			1 07
Saccandam.	5665	"	"	"	"	3–0	"	4.6	"	5/8	"	"	1 05
Coassemus.	6854	"	"	"	"	3–0	6.6	"	"	3/4	"	"	1 11
Saccaturam.	5666—	"	44	66	"	4-0	"	66	66	5/8	44.	"	1 09
	6855—	"	"	"	"	4-0	"	66	"	3/4	"	"	1 16

In ordering Ears state if the lips are desired tinned for soldering.

# Riveted Trolley Wire Splicer.

Patented.

For Figure 8 Wire.



THE inside of the lips of the Splicer is cast to the exact shape and size to fit snugly over the upper part of the Figure 8 Trolley Wire, the abutting ends of which meet in the center of the Splicer, being placed there by entering them from the ends of it. Steel rivets are regularly supplied to secure the wires in the Splicer, but solder can be used if preferred. The length of the Splicer is 12 inches.

CODE WORD.	NO.	a 1.	•	NT.	0	D		T21 C	XX72	_	EACH.
Sacrabam.	5667—	-Spiicer	IOT	NO.	. 0	в. (	vs S.	rig. č	s wire	9 <i></i>	<b>₽ ∪ 82</b>
Sacraturam.	<b>5668</b> —	"					6	76	"		85
Sacraveram.	5669-	- "	"	"	3-0	•	4	"	"		88
Sacriferam.	5670	- "	"	46	4-0	•	4	"	"		98

In ordering Splicers state if the lips are desired tinned for soldering.

# Clark Splicing Ear.

### For Figure 8 Wire.



THE adjacent ends of the trolley wire are secured in this Ear by means of cup-pointed set screws, as indicated in the above illustration. The length of the Ear is 12 inches.

CODE WORD.  Deficiam.	NO. 2516—S	plicing	g Ear	for	No	. 0 I	3. & S.	Fig. 8	Wire,	5⁄8	inch	Stud	EACH. \$ 1 14
Coaxamus.	6856	"	"		"	0	"		"	3/4		"	1 18
Defige bam.	2517-	"	"	"	"	2–0	"	"	"	5/8	"	"	1 16
Coaxaremus.	6857	"	"	"	"	2-0	"	"	"	3/4	"	"	1 22
Definxeram.	2518-	"	"	"	"	3–0	4.6	"	"	5/8	"	"	1 19
Coaxaturus.	6858	"	"	"	"	3–0	"	"	"	3/4	"	"	1 26
De flandam.	2519-	"	"	"	"	4-0	"	"	"	5/8	"	"	1 24
Coegimus.	6859	"	"	"	"	4–0	"	4.6	"	3/4	"	"	1 29

# Clark Trolley Wire Splicer.

For Figure 8 Wire.



THIS Splicer is in duplicate of the Clark Splicing Ear with the exception of the central boss, which is omitted in the splicer form.

CODE WORD.	NO.										EACH.
Deflectam.	2520 -	Splicer	for	No.	0	В.	& S.	Fig. 8	Wir	e	\$ 0 96
Defleturam.	2521-	. "	"	"	2-0		"	"	"		99
Deflexam.	2522	. "	"	"	3–0		"	"	46		1 02
Defloritam.	2523	- "	"	"	4-0		"	"	"		1 06

## Combination Splicing Ear.

#### Patented.

### For Round and Figure 8 Wires.



THIS form of Splicing Ear provides an efficient and practical means for connecting the adjoining ends of two different styles of trolley wires; the Round Wire being secured in position by solder, and the Figure 8 by steel rivets or solder, as preferred. The length of the Ear is 12 inches.

CODE WORD.	NO.											EA	CH.
Bubulinam.	2078	Combination	Ear	for	No	. 0	B. & S.	Wires,	5∕8	inch	Stud	\$ 1	. 06
Defanatam.	2505-	66	"	"	"	2-0	"	"	5/8	"	"	1	. 08
Defecandam.	2506	44	"	"	"	3-0	"	"	5/8	"	"	1	. 09
Defecatam.	2507	66	"	44	44	4-0	66	"	5/8	"	"	1	11

In ordering Ears state gauge and number of both the Round and Figure 8 Trolley Wires.

# Trolley Splicing Tube.

For Round Wire.



A slotted brass sleeve 8 inches in length, for soldering the abutting ends of the trolley wire together.

CODE WORD.  Acherusiam.	1132-	-Splicing	Tube	for	No.	. 0	B. & S.	Round	Wire	e	EACH. \$ 0 34
Defrenatam.	2528-	_ "	"	"	"	2–0	"	"	"		40
Maciandam.	4091-	_ "	4.6	"	"	3–0	66	"	66		45
Maciatam.	4092	_ "	"	"	"	4–0	66	"	, "		51

# Trolley Wire Connector. For Round and Grooved Wires.



THE adjoining sections of the trolley wire are spliced together by soldering them in the Connector. This is made of either cold drawn brass or pure copper rod, drilled to the proper size from either end, but left with a solid center, on each side of which slots are provided for the entrance of solder, and to allow the ends of the trolley wire to project through when drawing them to the desired tension. The Connector is made in two lengths, 15 and 18 inches respectively.

#### Brass Connector.

					••••						
CODE WORD.	NO.										EACH.
Buccam.	2080—0	Connector,	15 i	nches,	for	No	. 0 B.	& S.	Round	Wire	 \$ 0 86
Saepitam.	5671—	"	18	"	"	"	0	"	4.6	"	 1 09
Buceriam.	2081—	"	15	44	"	"	2-0	"	4.6	"	 95
Saevam.	5672-	"	18	"	44	"	2-0	"	44	4.6	 1 21
Bugoniam.	2082	44	15	44	"	"	3-0	"	44	"	 1 22
Saeviebam.	5673	4.6	18	4.	"	"	3–0	"	44	"	 1 57
Bulliam.	2083	"	15	"	"	66	4-0	"	"	"	 1 31
Sa evituram.	5674	6.6	18	"	"	4 6	40	"	"	"	 1 74
Florebam.	3109	"	15	"	"	"	2–0	"	Grooved	۰۰ ا	 97
Sagatam.	5675	"	18	"	"	"	2–0	"	"	"	 1 21
Floriferam.	3110	"	15	66	"	"	3–0	"	44	"	 1 28
Sagiam.	5676—	4.6	18	"	"	44	3-0	"	"	"	 1 58
Florigenam.	3111—	"	15	"	"	"	4-0	"	"	"	 1 41
Saginabam.	5677	"	18	"	"	"	4–0	"	"	"	 1 74

### Copper Connector.

Sagittabam.	5678-	Connector,	15	inches,	for	No.	0 1	В. а	& S.	Round	Wire	e	\$ 1	44
Sagmariam.	5679-	. "	18	"	"	"	0	•		"	"		1	76
Salebratam.	5680-	. "	15	4.6	"	" 2	-0	•	4	• • •	4.6		1	61
Saliendam.	5681-	_	18	"	"	" 2	-0	•	6	66	"		1	98
Saligneam.	5682-	. "	15	"	4 6	" 3	-0	•	4	"	44		1	83
Salitabam.	<b>568</b> 3	_ "	18	"	"	" 3	-0	•		"	"		2	30
Salituram.	5684-	. "	15	"	"	" 4	-0	•	4	"	"		2	04
Salivandam.	5685-	. "	18	"	"	"4	-0	•	6	"	4.6		2	56
Salivariam.	5686-	. "	15	66	"	" 2·	-0	4	' (	Grooved	"		1	61
Salivatam.	5687-	. "	18	. "	"	"2	-0	•	6	"	"		1	98
Salliam.	5688	. "	15	44	"	" 3	-0	•	6	4.6	"		1	83
Salliebam.	5689-	. "	18	**	"	" 3-	-0	•	6	"	66		2	28
Sallitam.	5690-	. "	15	"	"	"4	-0	•	•	"	"		2	04
Sallituram.	5691-	. "	18	4.6	"	" 4	-0	4	6	44	"		2	<b>56</b>

# **Emergency Trolley Wire Splicer.**

#### Patented.

#### For Round Wire.



In the Emergency Trolley Wire Splicer the adjacent ends of the trolley wire are secured in position by means of two slotted steel caps, serrated on the inside and tapered on the outside, which compress tightly over them and into the recesses provided in the Splicer. In making a splice, the ends of the wire are first rounded off slightly with a file, and after being entered in the Splicer, are forced inward with enough pressure to seat the caps on them to their full length; the normal strain of the trolley wire being sufficient to keep the caps in their proper place. The length of the Splicer is 9 inches.

CODE WORD.									EACH.
Butiendam.	2087	Splicer	for	No.	0 B	& S.	Round	Wire	 \$ 0 94
But it uram.									
Macteam.	4093-	"	"	"	3–0	"	"	"	 1 33
Madescam.	4094	"	"	"	4-0	"	"	"	 1 53

# Trolley Wire Coupler.

### For Round Wire.



THE connection between the abutting ends of the trolley wire is made by a seamless brass tube 15 inches in length, provided with slotted openings into which the wires are forced until their exterior surface is flush with the outside of the Coupler. Set screws, which are threaded in the tubing opposite the slots, hold the wires securely in place.

CODE WORD.								_				CH.
A cet averam.	1131-	-Coupler	for	No.	. 0	В. &	s.	Round	Wire	e	\$ :	1 36
Defremam.	2527-	_ "	4.6	4.6	4-0	"		. "	"		:	1 87

### **Detroit Section Insulator.**

### For Round, Figure 8 and Grooved Wires.

THE several forms of Detroit Section Insulators illustrated on this and the following pages are of the straight under-running type, and combine great strength and durability with medium weight. The end castings, which are united with the center one by means of two 5% inch drop forged steel studs covered with Dirigo Insulation, have the requisite strength to withstand the severest strains of the trolley wire. They are equipped with set screws to secure the trolley wire in place, thus obviating the use of solder. The Runner Piece, which is 12 inches in length, is made of lignum vitæ, fitted on either end with steel tips, and can readily be replaced with a new one when worn out.



### Side Suspension.

				-						
CODE WORD.	NO.	•								EACH.
Acuebam.	1137Side S	Suspension	for	No.	. 0	B. & S	S. Round	Wire	e	<b>\$</b> 7 50
${\it Malignabam}.$	4103—"	"	66	"	2-0	"	4.6	"		7 50
${\it Malignosam}.$	4104 "	"	"	"	3–0	"	44	"		7 50
Malinam.	4105 "	"	"	"	4–0	"	"	"		7 50
Malitiam.	4106 "	"	"	"	0	"	Fig. 8	"		7 50
${\it Malthabam}.$	4107- "	"	"	"	2-0	"	"	"		7 50
Mamertinam.	4108 "	"	"	"	3-0	"	"	"		7 50
Mammosam.	4109—"	"	"	"	4–0	"	44	"		7 50
Mancipabam.	4110—"	44	"	"	2-0	"	Grooved	" ا		7 50
Mancupatam.	4111 "	"	"	"	3-0	"	44	"		7 50
Mandabam.	4112—"	"	"	"	4-0	"	"	"		7 50
Defrugabam.	2529-Runne	r Piece								50

# Detroit Section Insulator.

### For Round, Figure 8 and Grooved Wires.



### Hanger Suspension.

#### For 5/8 inch Stud Bolt.

			101 78 111		ıuu	DUIL	, '				
CODE WORD.	NO.									EAC	H.
Defugatam.	2531-	Hanger	Suspension	for	No.	. 0	B. & S	. Round	Wire	\$ 7	<b>40</b>
Manumittam.	4123-	"	"	"	"	2–0	"	"	"	7	<b>40</b>
Marcabam.	4124-	""	"	"	"	3–0	. 44	"	"	7	40
Marcendam.	4125	"	"	"	"	4–0	44	"	"	7	40
Marcituram.	4126-	"	"	"	"	0	"	Fig. 8	"	7	40
Marginatam.	4127—	"	"	66	"	2–0	44	"	"	7	40
Maritabam.	4128-	"	"	"	"	3-0	"	44	"	7	40
Marmaricam.	4129	"	"	"	"	4-0	"	66	"	7	<b>40</b>
Marmorabam.	4130-	44	"	"	"	2–0	"	Grooved		7	<b>40</b>
Marmoream.	4131	"	"	"	"	3–0	"	"	"	7	40
${\it Masculam}.$	4132	44	"	"	"	4–0	"	"	"	7	40
De frugabam.	2529-	Runner	Piece								50

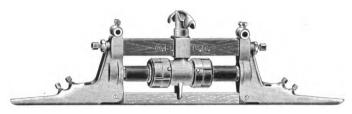
#### For 3/4 inch Stud Bolt.

Coelabimus.	6860-Hang	er Suspension	for	No	. 0	В. &	S. Round	$\mathbf{Wire}$	\$ 7	40
Coelandus.	6861—"	• • •	"	"	2-0	"	4.6	"	7	40
Coelatus.	686 <b>2</b> — ''	"	"	"	3-0	"	66	"	7	40
Coeliacus.	<b>6863</b> — "	"	"	"	4-0	"	"	"	7	40
Coemebamus.	6864—      "	"	"	"	0	66	Fig. 8	"	7	40
Coempturus.	6865—	"	"	"	2-0	"	"	"	7	40
Coenamus.	6866— "	"	"	"	3–0	"	"	"	7	40
Coen aturus.	6867— ''	"	"	4.6	4-0	"	"	"	7	40
Coenavimus.	6868—	4.6	"	"	2-0	- 66	Groove	l "	7	40
Coenitimus.	6869— "	"	"	"	<b>3</b> –0	"(	4.6	"	7	40
Coeptamus.	6870- "	"	"	"	4-0	"	44	"	7	40
De frugabam.	2529—Runn	er Piece	• • • •		• • • •			· · · · · · · · · · · ·		<b>50</b>

In ordering Section Insulators for Hanger Suspension state the diameter of Hanger Stud they are to be used with.



# Detroit Section Insulator. For Round, Figure 8 and Grooved Wires.



### Top Suspension.

		•		•					
CODE WORD.	NO.								EACH.
Defugandam.	2530-Top	Suspension	for	No.	. 0	B. &	S. Round	$Wire \dots \dots$	. \$ 7 50
Mandaturam.	4113—"	"	"	"	2–0	"	"	"	. 7 50
Mandendam.	4114 "	"	"	"	3–0	66	"	"	. 750
Manducabam.	4115 "	"	"	"	4–0	"	44	"	. 750
Manicabam.	4116 ''	"	"	"	0	"	Fig. 8	"	. 7 50
Mansam.	4117 "	"	"	"	<b>2</b> –0	"	"	"	. 7 50
Mansitabam.	4118—"	4.6	"	"	3-0	44	44		. 7 50
Mansuescam.	4119—"	"	"	"	<b>4</b> –0	. "	"	"	. 7 50
Mansuram.	4120 ''	"	66	"	2-0	"	Grooved	l "	. 7 50
Manticam.	4121 "	"	"	"	3–0	"	"		. 7 50
Manticulam.	4122 "	"	"	"	4-0	44	4.6	"	. 7 50
De frugabam.	2529—Run	ner Piece	. <b></b> .	· • • •					. 50

# Copper Protecting Sleeve.

## For Round, Figure 8 and Grooved Wires.

Made of rolled sheet copper and used for protecting the trolley wire at the ends of switches, cross-overs, section insulators, etc.

CODE WORD.  Mensurabam.	NO. 4168—S	Sleeve,	24	inches	long,	for	No	. 0	B. & S	. Round	Wire	e	EACH. \$ 0 88
Mentitam.	4169	66	24	"	"	"	"	2-0	"	"	46		88
Mephiticam.	4170	"	24	4.6	"	"	"	3–0	44	"	"		88
Meraculam.	4171	"	24	"	"	"	"	4-0	"	"	"		88
Mercatam.	4172—	"	24	"	"	"	"	0	"	Fig. 8	"		88
Merdaceam.	4173-	66	24	"	44	66	"	2-0	"	"	"		88
Merendabam.	4174-	"	24	"	"	"	"	3-0	4.6	"	44		88
Mergendam.	4175-	"	24	"	"	"	"	4-0	"	4.6	"		88
Mergitabam.	4176—	"	24	4.6	"	"	66	2-0	"	Grooved	"		- 88
Mericam.	4177-	66	24	"	"	"	"	3-0	"	"	"		88
Meritandam.	4178-	44	24	"	"	"	"	4–0	"	"	"		88



# Fibre Break Section Insulator. For Round, Figure 8 and Grooved Wires.

THIS form of Section Insulator is made of a single piece of hard fibre 12 inches long and 5% of an inch thick, to which the bronze castings are secured by means of heavy steel screw bolts.



#### Hanger Suspension.

For 5/	άi	inch	Stud	Bolt.
--------	----	------	------	-------

CODE WORD.	NO.		•								EACH.
Furnaceam.	3193—H	anger	Suspension	for	No.	0	B. &	S. Round	Wire	e	<b>\$ 6 40</b>
Maturabam.	4143—	"	"	"	"	2–0	"	"	"		6 40
Maturescam.	4144—	"	. "	"	"	3–0	"	"	"		6 40
Maturueram.	4145	"	"	"	"	4-0	"	. "	"		6 40
Mazam.	4146	"	"	"	"	0	"	Fig. 8	"		6 40
Me and am.	4147—	"	4.6	46	"	2–0	"	"	"		6 40
Meatam.	4148	4.6	"	"	"	30	46	46	"		6 40
Mediabam.	4149-	44	"	"	"	4–0	"	44	"		6 40
Medianam.	4150-	"	44	"	"	2–0	"	Grooved	"		6 40
Mediaturam.	4151-	"	**	"	"	3–0	"	"	"		6 40
Medicandam.	4152	"	46	"	"	4–0	"	. "	4.6		6 40
Fuscabam.	3195—F	ibre E	Break	• • • •	• • • •						2 20

#### For 3/4 inch Stud Bolt.

Coercuimus.	6871 -H	anger	Suspension	for	No.	. 0	В. &	S. Round	Wire	9	\$6	40
Cogentibus.	6872	"	"	"	"	2–0	"	"	"		6	<b>40</b>
Cogeremus.	6873-	"	"	"	"	3–0	"	"	"		6	40
Cogitandus.	6874—	4.6	4.6	"	"	4-0	"	"	"		6	40
Cogitatus.	6875	66	4.6	"	"	0	"	Fig. 8	66		6	<b>4</b> 0
Cognaturus.	6876-	"	"	"	"	2–0	"	"	"		6	40
Cognovimus.	6877—	"	"	"	"	3–0	"	"	4.6		6	40
Coinquimus.	6878	"	"	"	4.6	4–0	"	"	"		6	<b>40</b>
Coitibus.	6879—	"	"	"	"	2–0	4.6	Grooved	"		6	40
Colendus.	<b>6880</b> –	44	. "	"	"	3–0	66	"	"		6	40
Colicebus.	6881	"	44	"	4.6	4–0	44	44	"		6	<b>40</b>
Fuscabam.	3195Fi	bre B	reak					. <b>.</b>	• • • •		2	20

In ordering Section Insulators for Hanger Suspension state the diameter of Hanger Stud they are to be used with.



# Fibre Break Section Insulator. For Round, Figure 8 and Grooved Wires.



#### Top Suspension.

CODE WORD.	NO.			•	•					EACH.
Furrinam.		Suspension	for	Nο	Λ	D & G	. Round	Wire		
		Suspension	101			D. 66	. Itounu	W !! 6	· · · · · · · · ·	
${\it Masculinam}.$	4133— ''	••	••	•••	2-0	••	•••	••		6 50
Massyleam.	4134—''	4.6	"	4.6	3–0	"	"	"		6 50
Mataxam.	4135—"	4.6	"	"	4-0	"	4.6	66		6 50
Mateolam.	4136—"	"	"	"	0	"	Fig. 8	"		6 50
${\it Materiabam}.$	4137—''	"	"	"	2–0	"	ห	"		6 50
Matinam.	4138—"	"	"	"	3–0	"	"	66		6 50
Matricidam.	4139—''	66	"	"	4–0	"	"	"		6 50
Matronam.	4140 "	"	"	"	2–0	"	Grooved	l "		6 50
Matteam.	4141—"	46	"	"	3–0	4.6	"	"		6 50
Mattiacam.	4142 ''	66	"	"	4-0	"	"	"		6 50
Fuscabam.	3195—Fibr	e Break								2 20

# Wood Break Section Insulator. For Round, Figure 8 and Grooved Wires.

THIS Section Insulator is in duplicate of the Fibre Break illustrated above, except that the insulation consists of thoroughly seasoned hard wood. It is recommended for use only where the strains are not very severe.



### Top Suspension.

		-		-					
CODE WORD.	NO.								EACH.
Sardaturam.	5708—Top	Suspension	for	No.	0	B. & S	S. Round	Wire	. \$ 5 60
Sardaveram.	5709—"	- "	"	"	2-0	"	"		. 5 60
Sardianam.	5710— <b>"</b>	6.6	"	"	3–0	"	"		. 5 60
Sariebam.	5711— ''	6.6	"	66	4-0	46	"		. 5 60
Sariveram.	5712— ''	"	"	"	0	"	Fig. 8		. 5 60
Sarptam.	5713—"	4.6	"	"	2-0	44	ห		. 5 60
Sarranam.	5714— ''	66	"	"	3-0	66	"	"	. 5 60
Satagebam.	5715—"	4.6	"	"	4-0	"	"	"	. 5 60
Satageram.	5716 "	4.6	"	"	2-0	"	Grooved	l"	. 5 60
Satiandam.	5717—"	4.6	"	"	3-0	"	46	"	. 5 60
Satiatam.	5718—"	"	"	"	4-0	"	66		. 5 60
Satullabam.	5719—Woo	d Break					. <b></b>		. 44

44

### Wood Break Section Insulator.

For Round, Figure 8 and Grooved Wires.



### Hanger Suspension.

For 5% inch Stud Bolt.

		ror y⁄8 in	cn 3	tua bo	nt.						
CODE WORD.	NO.	·								EAC	н.
Saturandam.	5720—Hanger	Suspension	for	No.	0 B.	& 8	S. Round	Wire		<b>\$</b> 5	40
Saturatam.	5721— "	"	"	" 2-	-0	"	"	"		5	40
Satyricam.	5722— "	"	"	" 3-	-0	"	"	"		5	40
Sauciabam.	5723 "	4.6	"	" 4-	-0	"	"	"		5	40
Saxeam.	5724— "	66	"	"	0	"	Fig. 8	"		5	40
Saxuosam.	5725—"	**	"	" 2-	-0	"	66	"		5	40
Scabebam.	5726—"	44	"	" 3-	-0	"	. 46	"		5	40
Scabiosam.	5727— "	"	"	" 4-	- <b>0</b>	"	"	"		5	40
Scabituram.	5728— "	4.6	"	" 2-	-0	"	Grooved	l "		5	<b>4</b> 0
Scabridam.	5729—"	"	"	" 3-	-0	"	"	"		5	40
Scalpendam.	5730— "	"	"	" 4-	-0	"	"	"		5	40
Satullabam.	5719—Wood	Break		· · · · · · ·							44
		For 3/4 in	ch S	tud Bo	olt.						
Collatinus.	6882—Hanger					& S	S. Round	Wire		<b>\$</b> 5	40
Collatus.	6883— "	"	"	" 2-		"	"	"		•	40
Collaxamus.	6884— "	"	"	" 3-	•	"	"	"		-	40
Colletibus.	6885— "	"	"	" 4-	•	"	44	-44		-	40
Collibus.	6886— "	"	"	-	•	"	Fig. 8	46		-	40
Colligamus.	6887— "	**	"	" 2-	•	"	"	"			40
Collinimus.	6888 ''	46	"	" 3-	•	"	"	"		_	40
Collisibus.		"	"	·' 4-	•	"	66	"			
	0009	66	66	-4-	•				• • • •	_	40
Colliturus.	0030—			" <b>2</b> -	-	"	Grooved		• • • •	5	<b>40</b>
Collocutus.	6891—"	"	"	" 3-	-0	"	"	44		5	<b>40</b>
Collucatus.	6892— "	66	66	" 4-	^	66	66	66		-	40
Commontation.	0032	•		4-	-0				• • • •	Э	<b>40</b>

In ordering Section Insulators for Hanger Suspension state the diameter of Hanger Stud they are to be used with.

5719 Wood Break.....

Satullabam.

### Miami Section Insulator.

### For Round, Figure 8 and Grooved Wires.

THE Miami Section Insulator consists of a block of thoroughly seasoned hard wood, to which the bronze end castings are secured by means of machine bolts. The extremities of these castings are grooved at the bottom to receive the trolley wire, and the ends of the latter are held in place by means of set screws, as shown in the illustrations on this and the opposite page. The lips on the lower surface of the end castings are arranged for clinching under the wire after the latter is in place. The Runner Piece consists of a strip of hard wood, which can be quickly and easily removed and replaced with a new one when necessary. The Section Insulator illustrated below is intended for span wire suspension, while the form shown on the following page is arranged for suspension from a straight line hanger.



#### Top Suspension.

CODE WORD.	NO.									EAG	CH.
Sentiendam.	5793—Top Susp	ension	for	No.	0 E	3. &	S. Round	Wire	e	\$ 7	20
Sentinabam.	5794—''	46	"	"	2-0	"	4.6	"		7	20
Sentiscam.	5795—''	"	"	"	3–0	"	44	"		7	20
Sentosam.	5 <b>796</b> — ''	"	"	"	4–0	"	"	"		7	20
Separandam.	5797—"	44	"	"	0	"	Fig. 8	"		7	20
Separatam.	5798 "	"	"	"	2–0	"	"	"		7	20
Sepeliam.	5799- ''	"	"	"	3–0	"	66	"		7	20
Sepiam.	5800—"	"	**	"	4–0	"	"	"		7	20
Sepultabam.	5801 ''	"	. 6 6	"	$2\dot{-}0$	"	Grooved	"		7	20
Sepulturam.	5802 ''	"	"	"	3-0	"	"	"		7	20
Serenabam.	5803—"	44	"	"	4-0	"	"	"		7	20
Sericatam.	5804 - Runner	Piece.									77

# Miami Section Insulator.

### For Round, Figure 8 and Grooved Wires.



### Hanger Suspension.

#### For 5/8 inch Stud Bolt.

Tot 98 men staa bott:											
CODE WORD.	NO.									EACH.	
Seriolam.	5805—H	anger	Suspension	n for	No.	0 B	. &	S. Round	Wire	\$ 6 90	
Serpam.	5806-	"	44	"	"	2–0	"	66	"	6 90	
Serpebam.	<b>5807</b>	"	"	"	"	3-0	"	66	"	6 90	
Serpturam.	<b>5808</b> —	"	"	"	"	4-0	"	"	"	6 90	
Serpulam.	5809—	"	"	"	"	0	"	Fig. 8	"	6 90	
Servandam.	5810—	"	"	"	"	2-0	"		"	6 90	
Servatam.	5811—	"	"	"	44	3-0	44	"	"'…	6 90	
Sesquiplam.	5812	"	"	"	"	4-0	"	"	"	6 90	
Setigeram.	5813	"	"	"	"	<b>2</b> –0	"	Grooved	"	6 90	
Setosam.	5814—	"	"	"	"	3-0	"	"	"	6 90	
Sexungulam.	5815	"	"	"	"	4-0	"	"	"	6 90	
Sericatam.	5804—R	unner	Piece							77	

#### For 3/4 inch Stud Bolt.

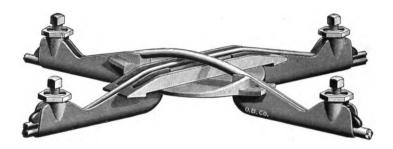
Collutulus.	6893—H	anger	Suspension	ı <b>f</b> or	No.	0 B	. & :	S. Round	Wire	\$ (	6 9	90
Collutus.	6894—	"	"	"	"	2-0	"	"	"	(	6 9	90
Colonicus.	6895	"	"	"	46	3-0	. "	"	"	(	6 9	90
Coloratus.	6896	"	44	"	"	4-0	"	"	"	(	6 9	90
Columbatus.	6897—	"	"	"	"	0	. "	Fig. 8	"		6 9	90
Columibus.	6898	"	46	"	"	2–0	"	-4.6	"	(	6 9	90
Comabamus.	6899—	"	44	"	"	3–0	"	"	"	(	6 9	90
Comaturus.	6900-	"	"	"	46	4–0	"	"	"	(	6 9	90
Combibe mus.	6901	"	"	"	"	2-0	"	Grooved	"	(	6 9	90
Comburimus.	6902—	"	"	"	"	3–0	"	"	"	(	6 9	90
Comesurus.	6903	"	"	"	"	4–0	"	"	"	(	6 9	90
Sericatam.	5804—R	unner	Piece		• • • • •						7	77

In ordering Section Insulators for Hanger Suspension state the diameter of Hanger Stud they are to be used with.



# Straight Under-Running Adjustable Cross-Over.

### For Round, Figure 8 and Grooved Wires.

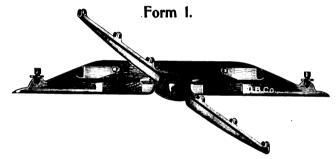


THE Straight Under-Running Adjustable Cross-Over is made of heavy bronze castings, with the metal so disposed as to prevent buckling in the center without making it of too great weight. It is suitable for either a right angle or an acute angle crossing, and, being pivoted in the center, is easily adjusted in position on the line, making an easy path for the trolley wheel in passing under, on account of its affording, as its name signifies, a straight under-run for it. A clamping arrangement at the extremity of each of the arms holds the wire securely in position without the use of solder.

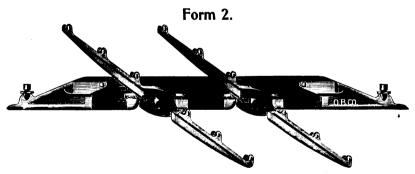
CODE WORD.	NO.											EACH.	
Acutandam.	1151—Ad	justable	Cross-	Over	for	No.	. 0	В. & S	S. Round	Wire	e	\$ 6 60	
Medicatam.	4153	6.6	"	"	"	"	2–0	"	"	"		6 60	
Medullabam.	4154—	"	"	"	"	"	3–0	"	"	"		7 40	
Melaniam.	4155—	"	"	"	"	"	4–0	"	"	"		7 40	
Defugiebam.	2533—	"	"	44	"	"	0	44	Fig. 8	"		6 60	
Meliorabam.	4156	"	"	"	"	"	2-0	"	"	"		6 60	
Melitesiam.	4157—	"	"	"	"	"	3-0	"	"	"		7 40	
Mellaceam.	4158	44	"	"	"	"	4-0	"	"	"		7 40	
Melliferam.	4159—	66	"	"	"	44	2–0	"	Grooved			6 60	
Melodiam.	4160	"	"	"	"	"	3-0	"	"	4.6		7 40	
Membratam.	4161—	"	"	"	"	"	4–0	44	"	"		7 40	

# Miami Insulated Adjustable Cross-Over. For Round, Figure 8 and Grooved Wires.

In the Miami Cross-Over the wood break, which serves to separate and insulate the live and dead wires, is made of thoroughly seasoned hardwood stock, and coated with an insulating and preservative paint. No cutting of wires is necessary to place the Cross-Over in position, and the work of installing it is quickly and easily accomplished. A wide range of angular adjustment is provided, to adapt the Cross-Over to wires crossing either at right or acute angles, an adjustment of approximately 45° either way from a right angle being provided in the standard patterns here shown.



This style is for two single trolley wires crossing each other.

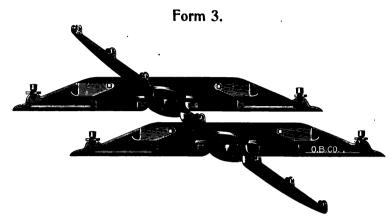


This Cross-Over is designed for two live parallel trolley wires crossing a dead one.

In ordering Cross-Overs state gauge, number and style of both live and dead Trolley Wires, and if the Form 2 is desired, the separation required between the two live parallel wires; also the angle at which they cross the dead one.

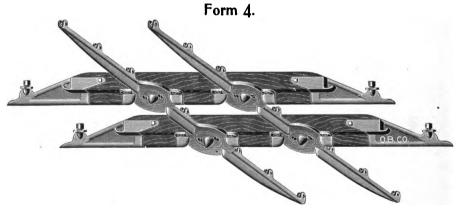
### Miami Insulated Adjustable Cross-Over.

For Round, Figure 8 and Grooved Wires.



In this form of the Miami Cross-Over a means is provided for crossing two dead parallel trolley wires over a live one.

CODE WORD. NO. EACH. Screaveram. 5750—Form 3 Insulated Adjustable Cross-Over . . . . . . \$30 80



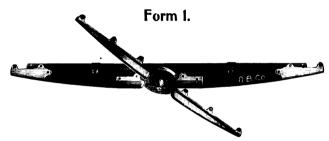
This design is for two live and two dead parallel trolley wires crossing each other.

In ordering Cross-Overs state gauge, number and style of both live and dead Trolley Wires and the separation required between the parallel wires; also the angle at which they cross each other.

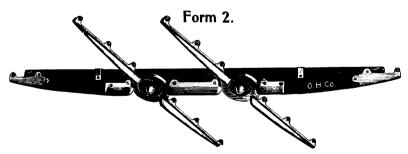
## Chapman Insulated Adjustable Cross-Over.

#### For Round, Figure 8 and Grooved Wires.

In this type of Insulated Cross-Over, several different designs of which are illustrated on this and the following page, the live and dead wires are thoroughly insulated from each other by a wood break made of selected hardwood stock boiled in paraffine and coated with an insulating and preservative paint. In placing the Cross-Over in position it is not necessary to cut the wires, so that the circuits remain intact. The dead wire is entirely protected from moisture, being laid in a groove in the top of the wood break, over which a capping piece fits closely. The crossing trolley wires may be adjusted either at right or acute angles; the range of adjustment being approximately 45° either way in the standard patterns. Special designs will be supplied to meet existing conditions requiring them.



This style is for two single trolley wires crossing each other.

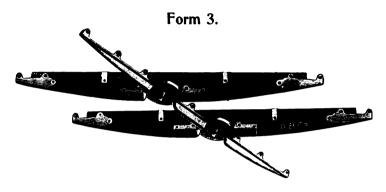


This Cross-Over is designed for two live parallel trolley wires crossing a dead one.

In ordering Cross-Overs state gauge, number and style of both live and dead Trolley Wires, and if the Form 2 is desired, the separation required between the two live parallel wires; also the angle at which they cross the dead one.

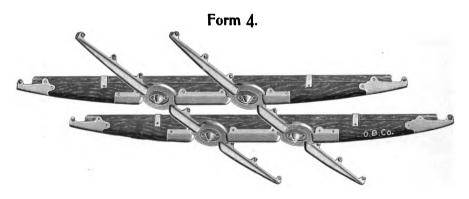
### Chapman Insulated Adjustable Cross-Over.

For Round, Figure 8 and Grooved Wires.



In this form of the Chapman Cross-Over a means is provided for crossing two dead parallel trolley wires over a live one.

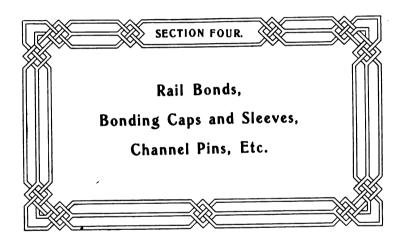
CODE WORD.	NO.	EACH.
Menianam.	4166—Form 3 Insulated Adjustable Cross-Over	\$26 40



This design is for two live and two dead parallel trolley wires crossing each other.

CODE WORD.	NO.	•	EAC	н.
Mensulam.	4167—Form 4 Insulated A	djustable Cross-Over	<b>\$</b> 33	00

In ordering Cross-Overs state gauge, number and style of both live and dead Trolley Wires and the separation required between the parallel wires; also the angle at which they cross each other.



#### Patented.

#### General Description.

THE "All Wire" Rail Bond represents the highest development which has yet been attained in rail bond design and construction. It is made entirely from a single continuous piece of flexible copper cable,

"One Piece" Bond.

and forms the most perfect type of a "One Piece" Bond ever placed on the The terminals are formed directly from the ends of the cable, so that there are no cast or welded joints in the

Bond to become loose or interpose additional internal resistance.

The conductivity of the "All Wire" Bond equals that of commercially pure drawn copper, and this conductivity is maintained throughout the entire length of the Bond, including not only the conducting strands, but also the terminals. Compared with bonds having cast copper terminals, or separate terminals united to the conducting wires by either

Throughout Equal to

a casting or welding process, the con-Uniform Conductivity ductivity of the "All Wire" Bond is much greater. This is due to the fact that it maintains throughout its entire Pure Drawn Copper. length the same conductivity as that of the conducting strands, while the

conductivity of cast copper terminals is invariably much lower than that of pure drawn copper; and, on the other hand, the entire absence of joints in the Bond overcomes the inherent defects of bonds having cast or welded joints between the terminals and the conducting wires, as there is always a possibility of such joints being poorly made.

#### Patented.

#### General Description,

#### Continued.

HE Bond is primarily intended for use under the fish plate, in which position it is perfectly protected from injury from outside

> Under the Fish Plate.

causes, as well as from theft, and a variety of styles are manufactured for such use. It may also be placed around the fish plate or under the base of the rail, if desired, special types of Bonds

being furnished for these purposes, as well as for cross-connecting and underground bonding.

The Bond is applied by means of a Compressor, insuring a perfect contact between the terminals of the Bond and the rail ends. design of the terminals is such that a large contact surface is presented

of Rails Can Be Utilized.

to the rail, thus securing a connection of Full Carrying Capacity extremely low resistance, and enabling the rails to be economically bonded to their full carrying capacity. As the terminals are expanded in the rail under

pressure, there is no possibility of deterioration at the point of contact, and the troubles caused by electrolysis, largely due to imperfect bonding, are practically eliminated.

The stranded copper cable composing the Bond possesses a high

Possesses Maximum Flexibility.

degree of flexibility, enabling it to successfully withstand the constant jar and vibration of the rails, as well as their expansion and contraction, without affecting the efficiency of the Bond.

#### Patented.

#### General Description,

#### Continued.

THE "All Wire" Rail Bond is regularly manufactured in a variety of types and forms, a number of which are shown on the following

A Variety of Types and Sizes.

pages, as well as the standard sizes in which they are made. In addition to these, we are prepared to furnish to order, if desired, a variety of special styles and types, as well as

special lengths and capacities not included in the regular lists.

In ordering Bonds, it is necessary that the following information be given us as fully as possible, viz., the type and form of bond desired, the distance from center to center of terminals, the diameter of

#### Instructions for Ordering.

terminals, the size or capacity required, the section number of Rail and Splice Bar and maker's name, the distance from end of rail to center of first bolt hole, the distance between centers of first and second bolt holes,

and the diameter of bolts. If the bond holes are already drilled, the distance from the ends of rails to the centers of holes for bond terminals should be given in addition to the information called for above.

In drilling the rails for Bonds, standard twist drills should be used, of exactly the same size as the bond terminals. The holes

## Drilling Rails for Bonds.

should be made exact size, being neither "scant" nor "full," as the terminals are made the proper size to insure a perfect fit. The drill should be lubricated with soap or

soda water, and not oil. The distance from center to center of bond holes should be made exactly the same as that between centers of bond terminals, in order to secure the best results.

#### Patented.

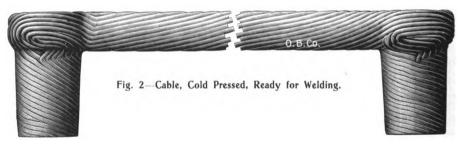
#### How It Is Made.

THE distinctive feature of the "All Wire" Rail Bond is the fact that it is made entirely from one continuous piece of flexible copper cable. All other bonds on the market at the present time differ in this respect from the "All Wire," as they are built up of at least three separate and distinct parts. In the manufacture of the "All Wire" Bond, the cable is first cut to length, as shown in Figure 1.



Fig. 1-Cable, Cut to Length.

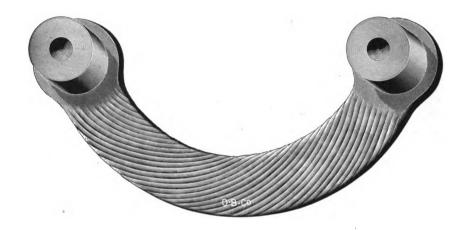
It is then placed in a forming machine and the ends of the cable are cold pressed into shape for the terminals, as illustrated in Figure 2. In this form the strands of wire in the terminal are compressed firmly together, as the illustration shows; the size of the terminal, however, being considerably larger than in the finished Bond.



The ends of the Bond are then heated to the welding point in a special furnace, and then compressed approximately to size and shape in a steel die. In the latter process the size of the terminal is considerably reduced, the wires composing it being perfectly welded together into a homogeneous mass of solid copper. The terminal is finally placed in a trimming die and finished accurately to size. The illustration on the opposite page shows the appearance of the finished Bond, and illustrates the perfect manner in which the wires of the cable are gradually merged into the solid copper terminal.

Patented.

#### Type A-Form 1.



THE "Horse Shoe" type of Bond which is illustrated in the above cut, is placed either between the first bolt holes, or between the first and second bolt holes, according to the length of bond employed. It may be used for double bonding, if desired, by overlapping the bonds, as illustrated on page 237.

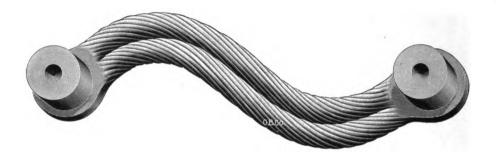
For catalogue numbers and list prices see page 225.

In ordering Bonds give full information as called for on page 211.



Patented.

#### Type C—Form 2.



In the Type C Bond the terminals are connected by two parallel copper cables, as illustrated above. Owing to the form in which it is made, this Bond is extremely flexible and is recommended for use where the bond holes are located between the first and second bolt holes.

For catalogue numbers and list prices see page 226.

In ordering Bonds give full information as called for on page 211.



Patented.

Type D—Form 1.



THE Type D Bonds illustrated on this and the following page are designed especially for use on elevated structures and third rail systems where the bonds can be placed underneath the base of the rails and close to their extremities. These Bonds may be used with either tee or girder rails, the bond holes being drilled through either or both sides of the rail base and at right angles to the upper surface of the latter. The bond terminals are provided with beveled heads to compensate for the taper of the rail base. In the Form 1 illustrated above, the strands lie against the lower surface of the rail. An application of this Bond is shown on page 237.

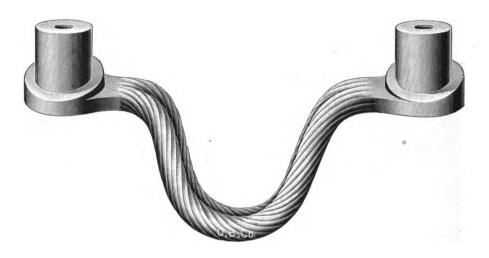
Sizes and prices are special, and will be furnished upon application.

In ordering Bonds give full information as called for on page 211.



Patented.

#### Type D-Form 2.



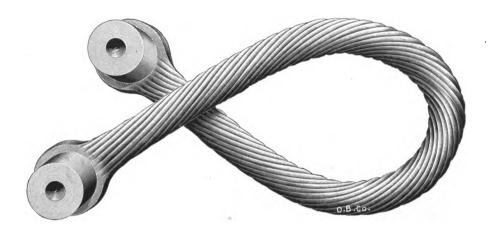
THE Type D-Form 2 Bond here shown is intended for use under the same conditions as the Form 1 described on the preceding page. The principal difference between these two forms is, that in the Form 2 the strands lie in a perpendicular plane instead of a horizontal one, as in the Form 1.

Sizes and prices are special, and will be furnished upon application.

In ordering Bonds give full information as called for on page 211.

Patented.

#### Type E-Form 1.



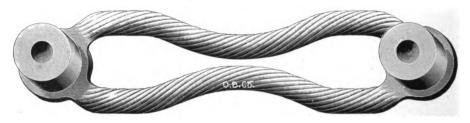
THIS represents the cheapest and most efficient form of Bond on the market for cross-connecting and such special bonding as around the fish plate, etc. It is made in any length or capacity required. As bonds of this type are often placed underground, where they are subject to deterioration by contact with the soil, it is sometimes advisable to have them tinned, and they can be so furnished to order when required.

For catalogue numbers and list prices see pages 227 and 228.

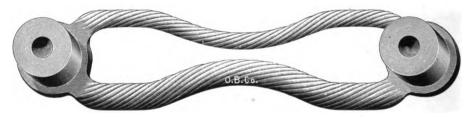
In ordering Bonds give full information as called for on page 211.

Patented.

#### Type F—Form 1.



Type F—Form 2.



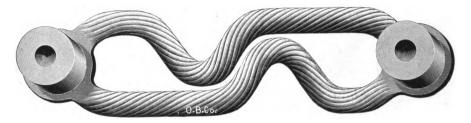
THE Type F Bonds, shown in a variety of forms on this and the following pages, are especially recommended where it is necessary to span one or more bolts under the fish plate. In this type of bond the separation between the strands, where the latter enter the terminals, permits of the bond holes being drilled close to the bolt holes, so that short bonds of this type may often be used to advantage. The Form 2 Bond illustrated above is similar to the Form 1, except that the upper strand is smaller in diameter than the lower one, making it suitable for use where the space above the bolts is too small to take a Form 1 Bond.

For catalogue numbers and list prices see pages 229 and 230.

In ordering Bonds give full information as called for on page 211.

Patented.

#### Type F—Form 3.



Type F-Form 4.



FOR single bonding, where the bonds span the inner bolts under the fish plate, the Type F-Forms 3 and 4 Bonds here illustrated are especially recommended. They are equally suitable for tee or girder rails, and possess extreme flexibility on account of the manner in which the strands are crimped. An application of the Form 3 Bond is shown on page 238. In the Form 4 Bond the upper strand is of smaller diameter than the lower one, enabling it to be used under the fish plate where the space above the bolts is smaller than that below them.

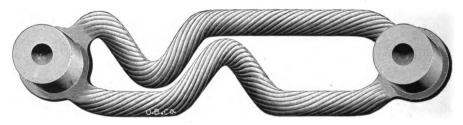
For catalogue numbers and list prices see pages 231 and 232.

In ordering Bonds give full information as called for on page 211.

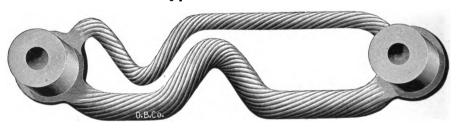


Patented.

Type F—Form 5.



Type F—Form 6.



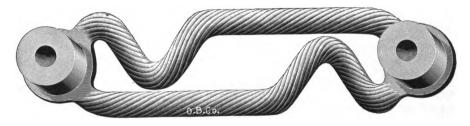
THE Type F-Forms 5 and 6 Bonds, which are shown in the above illustrations, are similar to the Forms 3 and 4 on the preceding page, except in the manner in which the strands are crimped. They are designed especially for double bonding, the crimp in each strand being at the same end of the bond, to provide an open loop at the opposite end for spanning the bolts and allowing room for compressing the terminal of the bond on the opposite side of the rail. The Form 6 Bond is similar to the Form 5 except that the upper strand is smaller than the lower one, making it suitable for use where the space above the bolts is too small to take a Form 5 Bond. An application of the Form 6 Bond is shown on page 238.

For catalogue numbers and list prices see pages 233 and 234.

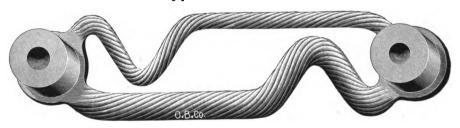
In ordering Bonds give full information as called for on page 211.

Patented.

#### Type F—Form 7.



Type F-Form 8.



THE Bonds illustrated above are intended especially for double bonding, and the crimp in each of the strands is located near the terminal to provide an open loop in the center for spanning the inner bolts under the fish plate and the terminal of the bond on the opposite side of the rail. One of the various applications of these Bonds is shown in the cut on page 239. In the Form 8 Bond the upper strand is of smaller diameter than the lower one, enabling it to be used under the fish plate where the space above the bolts is smaller than that below them.

For catalogue numbers and list prices see pages 235 and 236.

In ordering Bonds give full information as called for on page 211.



Patent Applied For.

#### Type G—Forms 1 and 2.

THE Type G Rail Bonds, two forms of which are illustrated on the opposite page, consist of a number of strips of soft, cold rolled copper, the ends of which are perfectly welded together, forming solid copper terminals. While the design of the Type G Bonds is radically different from that of the various forms described on the preceding pages, the process of manufacture is almost identically the same, so that these Bonds possess the same characteristics as the other forms. The design of these Bonds is such that a greater degree of flexibility is obtained than is possible in any type of terminal bond at present on the market.

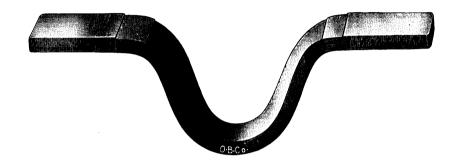
The Bonds are secured in place by soldering them to the ends of the rails, and for this purpose a special form of Soldering Torch and other requisite tools are supplied. The rails are cleaned and polished by means of a portable grinding machine and then thoroughly tinned at the points where the Bonds are attached to them. When properly applied, it is impossible for the Bonds to become loose, as only a violent and determined effort will detach them. Full instructions are furnished for applying the Bonds, and the work of installing them can be accomplished in a most thorough manner without difficulty.

These Bonds are especially suitable for use on elevated structures, third rail systems and mining installations where exposed bonds are not likely to be tampered with. They are especially recommended for mine haulage plants using small rails, as it is impossible, where such rails are used, to place any terminal bond under the fish plate, or in the base of the rail.

The two forms illustrated on the opposite page are equally suitable for use with tee or girder rails. The Form 1 may be applied to the lower surface of the rail base (see page 239), or the upper surface of the latter, where it will not interfere with the fish plate. The Form 2 Bond is designed for attaching to the outer side of the ball of the rail; or in some cases where space will permit, under the tram of girder rails.

Patent Applied For.

Type G-Form 1.



Type G-Form 2.



Sizes and prices are special and will be furnished upon application.

For Soldering Apparatus see Tool Section.



#### "All Wire" Bond Terminals.

#### Patented.



THESE Terminals may often be used to advantage for cross-connecting and other special bonding work requiring extra long bonds. They are intended for use in connection with lengths of copper wire or cable; the Terminals being fastened to the wire either by means of a Rail Bond Connector, as shown on the opposite page, or by soldering them together. By using these Terminals with odd lengths of copper wire or cable, special bonding of this kind can often be done satisfactorily at a very nominal expense. The sizes listed below are regularly supplied with 12 inches of flexible copper cable, but can be furnished with special lengths to order.

CODE WORD.	NO.							PI	ER 100.	
Ebiteremus.	7533—Bond Te	rminals,	No.	B. & S	. Gauge	e, ½ ir	ich Termii	nal	\$48 60	
${\it Ebitimus}.$	7534—''	"	" (	) "	"	5/8	"		54 60	
Ebria bamus.	7535—"	"	" 2-0	"	"	1/2	"		50 40	
${\it Ebriaturus}.$	7536—"	"	" 2-0	) "	"	5∕8	"		56 20	
${\it Ebriavimus}.$	7537—''	"	" 2–0	) "	"	3/4	"		59 80	
Ebullamus.	7538—"	"	" 3-(	) "	"	3/4	" "		67 00	
Ebullitus.	7539 ''	"	" 3–0	"	"	7/8			72 40	
${\it Eburarius}.$	7540—	44	" 4–0	"	"	3/4			71 50	
Eburonibus.	7541—''	"	" 4–0	, ,,	"	7/8	"		76 80	

In ordering Bond Terminals state length of wire, capacity and size of Terminal required.



#### Rail Bond Connector.



THIS Connector is made of copper and is especially applicable for splicing "All Wire" Bond Terminals to underground cables, etc.

The ends of the cables are passed through the Connector, headed over and then soldered into it.

CODE WORD.	NO.									PER	100.
Beavimus.	6565-						S.	Stranded	Wires.	\$	0 24
Bebrycibus.	6566-	. "	"	"	2-0	"		"	" .		26
Bechiribus.	6567-	. "	"	"	3-0	"		"	" .		29
Beliadibus.	6568		"	"	4–0	"		"	".		32

### "All Wire" Rail Bond.

Patented.

## Type A—Form 1. Price List.

i	ength 4.	Inches.			Le	ngth 5	Inches.			
Code Word.	No.	Cap. B. & S. Gauge.	Size of Term. Inches.	Price per 100.	Code Word.	No.	Cap. B. & S. Gauge.	Size of Term. Inches.	Pri pe 10	er
Utendam.	5829	0	½ 5/8	\$44 30	Vadandam. Vadaveram.	5843 5844	3-0 3-0	3/4	\$62	
Uterinam.	5830	0	5/8	50 40	Vadosam.	5845	4-0	7/8	68 67	
Utrariam.	5831	2-0	1/2	45 40				3/4		
Uvescam.	5832	2-0	5/8	51 80	Vagabundam.	5846	4-0	7/8	12	40
Uvidulam.	5833	2-0	3/4	57 60						
Uviferam.	5834	3-0	3/4	60 20	Le Le	ngth 6	Inches.			
Vacculam.	5835	3-0	5/8 3/4 3/4 7/8 3/4	66 00						
Vacefiam.	5836	4–0		63 40	Vagiam.	5847	0	1/2	\$48	Λſ
Vacillabam.	5837	4-0	7/8	68 60	Vagiebam.	5848	ŏ	5/8	53	
1	Length 5	Inches.	·		Vaginulam.	5849	2-0	1/2	49	
	, 3				Vagiveram.	5850	2-0	5/8	55	
Vacivam.	5838	0	1/2	\$45 90	Valebam.	5851	2-0	5/8 3/4	61	80
Vacuabam.	5839	0	5/8	52 20	Valedicam.	5852	3-0	34	65	
Vacuandam.	5840	2-0	1/2 5/8 1/2 5/8 3/4	47 50	Valendam.	5853	3–0	7/8	71	<b>4</b> 0
Vacuaveram.	5841	2-0	5/8	53 90	Valentulam.	5854	4-0	3/4	70	
Vadabam.	5842	2-0	3/	59 70	Validam.	5855	4-0	7/8	75	50

Bonds of intermediate lengths between those specified above will take proportionate prices.



#### Patented.

## Type C—Form 2. Price List.

	Length 6	Inches			Length 10 Inches.					
	Length 0					ngth IV				
Code Word.	No.	Cap. B. & S. Gauge.	Size of Term. Inches.	Price per 100.	Code Word.	No.	Cap. B. & S. Gauge.	Size of Term. Inches.	Price per 100.	
Abnutatus.	6072	0	1/2	\$48 00	Acendus.	6108	0	1/2	\$54 20	
Abnutivus.	6073	Ŏ	5/8	53 90	Acentibus.	6109	Ŏ	5/8	60 20	
Abolebamus.	6074	2-0	1/2	49 60	Acephalus.	6110	2-0	1/2	57 00	
Abolemus.	6075	2-0	5/8	55 70	Aceraturus.	6111	2-0	5/8	62 90	
Abolendus.	6076	2-0	3/4	61 50	Acervandus.	6112	2-0	34	68 90	
Aboleremus.	6077	3–0	3/4	65 50	Acervatus.	6113	3-0	34	75 20	
Abominamus.	6078	3-0	7/8	71 30	Acetabamus.	6114	3-0	7/8	81 00	
Abortamus.	6079	4-0	34	70 20	Acetamus.	6115	4-0	34	82 40	
Abortibus.	6080	4-0	7/8	75 50	Acetaremus.	6116	4-0	7/8	87 70	
	Length 7	Inches.			L. L.	ength 11	Inches.	1		
Aborturus.	6081	0	1/2	\$48 80	Anatibus.	6117	0	1/2	\$55 70	
Abrogamus.	6082	ŏ	5/8	55 50	Ancisibus.	6118	ŏ	5/8	61 80	
Absolvimus.	6083	2-0	1/2	51 50	Anclamus.	6119	2-0	1/2	58 90	
Abstabamus.	6084	2-0	5/8	57 60	Anclaremus.	6120	2-0	5/8	65 00	
Abstamus.	6085	2-0	34	63 40	Acetaribus.	6121	2-0	78 34	70 00	
Abstaremus.	6086	3-ŏ	34	67 90	Acetavimus.	6122	3-0	3/	77 60	
Abstaturus.	6087	3-0	7/8	74 00	Achernanus.	6123	3-0	34 7/8	83 50	
Abstavimus.	6088	4-0	34	72 90	Achlibus.	6124	4-0	34	85 50	
Absumimus.	6089	4-0	7/8	78 40	Achoribus.	6125	4-0	7/8	90 40	
	ength 8	Inches.	1 /9		Le		Inches.	70	1	
	<del></del>	1		<del></del> -	· — — — — — — — — — — — — — — — — — — —		1	1	1.	
Abusivus.	6090	0	1/2	\$51 20	Achradibus.	6126	0	1/2	\$57 30	
Accalibus.	6091	0	5/8	56 00	Acidibus.	6127	0	5/8	63 40	
Accedendus.	6092	2-0	1/2	53 30	Aclassibus.	6128	2-0	1/2	60 70	
Accentibus.	6093	2-0	5/8	59 10	Aclidibus.	6129	2-0	5/8	66 80	
Acceptamus.	6094	2-0	3/4 3/4	65 20	Acroasibus.	6130	2-0	3/4	72 60	
Accinendus.	6095	3-0	3/4	70 50	Ballabimus.	6131	3-0	3/4	81 40	
Accingimus.	6096	3-0	7/8	76 00	Actoribus.	6132	3-0	7/8	85 90	
Acclamamus.	6097	4-0	3/4	76 30		6133	4-0	3/4	88 20	
Acclaratus.	6098	4-0	7/8	81 50	Acuminamus.	6134	4-0	7/8	93 70	
	Length 9	Inches.			Le	ngth 14	Inches.			
Acclinamus.	6099	0	1/2	\$52 50		6135	0	1/2	\$60 50	
Accredimus.	6100	0	5/8	58 60	Acutandus.	6136	0	5/8	66 20	
Accubuimus.	6101	2-0	1/2	55 30		6137	2-0	1/2	64 40	
Accudimus.	6102	2-0	5/8	61 30	Adaequamus.	6138	2-0	5/8	70 50	
Accuramus.	6103	2-0	34	67 00	Adaeramus.	6139	2-0	34	71 50	
Accurrimus.	6104	3-0	3/4	72 90	Adamamus.	6140	3-0	3/4	84 80	
Accusandus.	6105	3-0	7/8	78 60	Adamaturus.	6141	3-0	7/8	90 80	
Accusatus.	6106	4-0	3/4	79 20	Adamavimus.	6142	4-0	3/4	90 40	
Acebamus.	6107	4-0	7/8	84 50	Adaperimus.	6143	4-0	7/8	100 00	

Bonds of intermediate lengths between those specified above will take proportionate prices.



Patented.

# Type E—Form 1. Price List.

L	ength 2	0 Inches	3.		Length 32 Inches.					
Code Word.	No.	Cap. B. & S. Gauge.	Size of Term. Inches.	Price per 100.	Code Word.	No.	Cap. B. & S. Gauge.	Size of Term. Inches.	Price per 100.	
Adedimus.	6162	0	1/2	\$68 60	Adurimus.	6225	0	1/2	\$88 50	
Ademtus.	6163	0	5/8	75 30	Adussimus.	6226	0	5/8	93 90	
A deptibus.	6164	2-0	1/2	77 50	Adusturus.	6227	2–0	1/2	100 30	
Aderrandus.	6165	2-0	5/8	81 90	Advectatus.	6228	2-0	5/8 3/4	106 70	
A derratus.	6166	2-0	34	88 50	Advectivus.	6229	2-0	3/4	112 20	
Ades camus.	6167	3-0	3/4	99 00	Advelamus.	6230	3-0	3/4	130 70	
Ade <b>s</b> urimus.	6168	3–0	7/8	105 70	Advenimus.	6231	3-0	7/8	133 20	
Adesus.	6169	4-0	3/4	112 20	Adventibus.	6232	4-0	3/4	151 70	
${\it Adhalamus}.$	6170	4-0	7/8	118 90	Adversimus.	6233	4–0	7/8	157 10	
L	ength 2	4 Inches			Le	ength 34	Inches	•		
Aditabamus.	6180	0	1/2	\$75 20	Affectamus.	6243	0	1/2	\$91 00	
Aditamus.	6181	Ŏ	5/8	81 90	Affectibus.	6244	ŏ	5/8	97 60	
Adiacendus.	6182	2-0	1/2	85 80	Afficturus.	6245	2-0	1/2	105 70	
Adiacuimus.	6183	2-ŏ	5/8	91 00	Affidendus.	6246	2-ŏ	5%	110 80	
Adiubendus.	6184	2-0	3/4	96 40	Affingimus.	6247	2-0	5/8 3/4 3/4	116 20	
Adjugamus.	6185	3-0	34	109 60	Affirmamus.	6248	3-ŏ	34	134 70	
Adjungimus.	6186	3-0	7/8	116 00	Affixurus.	6249	3-0	7/8	145 20	
Adjutandus.	6187	4-0	34	125 20	Afflamus.	6250	4-0	34	155 80	
Adjutatus.	6188	4-0	7/8	130 80	Afflaremus.	6251	4-0	7/8	163 70	
L	ength 28	8 Inches	•		Le	ength 30	Inches	•	·	
Admoturus.	6198	0	1/2	\$81 90	Affricus.	6261	0	1/2	\$95 00	
Admovimus.	6199	ŏ	5/8	88 40	Aggemendus.	6262	ŏ	5/8	100 30	
Admulcemus.	6200	2-0	1/2	92 40	Aggemitus.	6263	2-0	1/2	108 20	
Adnectimus.	6201	2-ŏ	5/8	99 00	Aggerandus.	6264	2-0	5/8	114 80	
Adobruamus.	6202	2-ŏ	34	104 10	Aggerimus.	6265	2-0	3/4	120 10	
Adopertus.	6203	3-0	34	120 00	Aggestus.	6266	3-ŏ	3/4	139 80	
Adoptatus.	6204	3-0	7/8	125 30	Aggravamus.	6267	3-ŏ	7/8	146 50	
Adoptemus.	6205	4-0	34	138 60	Aggredimus.	6268	4-0	34	162 20	
Adorabamus.	6206	4–0	7/8	143 80	Aggregatus.	6269	4-0	7/8	169 00	
L	ength 30	0 Inches	•		Le	ength 38	Inches	•		
Adoramus.	6207	0	1/2	\$84 50	Albantibus.	6279	0	1/2	\$97 60	
Adoraturus.	6208	ŏ	5/8	91 00	Albaremus.	6280	ŏ	5/8	104 10	
Adorabimus.	6209	2-0	1/2	96 40	Albavimus.	6281	2-0	78 1/2	112 20	
Adoriendus.	6210	<b>2</b> –0	5/8	104 10	Albeamus.	6282	2-0	5/8	118 90	
Adorsurus.	6211	2-ŏ	34	108 20	Albebimus.	6283	2-0	78 34	124 00	
Adortus.	6212	3-0	34	125 20	Albicamus.	6284	3-0	3/ <sub>4</sub>	145 00	
Adradendus.	6213	3-0	7/8	130 70	Albiturus.	6285	3-0	74 7/8	151 80	
Adrasurus.	6214	4-0	34	145 10	Albueramus.	6286	4-0	34	169 00	

Bonds of intermediate lengths between those specified above will take proportionate prices.



Patented.

# Type E—Form 1. Price List—Continued.

L	ength 4	10 Inche	s.			1	ength.	48 Inche	s.		
Code Word.	No.	Cap. B. & S. Gauge.	Size of Term. Inches.	Prio pe 100	r	Code Word.	No.	Cap. B. & S. Gauge.	Size of Term. Inches.	Pric pe 100	r
Allecturus.	6297	0	1/2	\$101		Corrisurus.	7003	0	1/2	\$113	
Allegendus.	6298	0	5/8	106	90	Corrivimus.	7004	0	58	118	90
Allegatus.	6299	2–0	1/2	116		Corrodemus.	7005	2-0	1/2	132	00
Allevamus.	6300	2-0	5/8	121	50	Corruimus.	7006	2-0	5∕8 .	138	80
Allidimus.	6301	2–0	3/4	130		Corymbus.	7007	2-0	3/4	145	10
Alligamus.	6302	3-0	3/4	137	10	Cottianus.	7008	3–0	3/4	171	80
Allinendus.	6303	3-0	7/8	155		Crambebus.	7009	3–0	7/8	175	
Allucendus.	6304	4-0	3⁄4	171	20	Crapulosus.	7010	4-0	3/4	200	
Alpinus.	6305	4-0	7⁄8	181	00	Crassianus.	7011	4-0	7⁄8	207	20
	ength 2	12 Inche	s.			L	ength 5	0 Inche	s		
Bellandus.	6570	0	1/2	\$104	10	Altabimus.	6306	0	1/2	\$117	60
Bellemus.	6571	0	5/8	108	10	Altandus.	6307	0	5/8	121	30
Bellicosus.	6572	2–0	1/2	120	00	Altatus.	6308	2–0	1/2	136	00
Continemus.	6979	2-0	5/8	126	80	Altemus.	6309	2-0	5/8	141	10
Contractus.	6980	2-0	3/4	132	00	Altercamus.	6310	2-0	3/4	147	80
Contrarius.	6981	3–0	3/4	154	60	Alternatus.	6311	3-0	3⁄4	175	60
Contuitus.	6982	3–0	7/8	161	00	Alternemus.	6312	3-0	7/8	180	
Contusus.	6983	4-0	3/4	182	10	Alticomus.	6313	4-0	3/4	207	20
Convasamus.	6984	4-0	7/8	187	50	Alucinatus.	6314	4-0	<i>7</i> ∕8	213	85
1	ength 4	4 Inche	s.			L	ength 5	5 Inche	s.		
Convehimus.	6985	0	1/2	\$108	00	Cratibus.	7012	0	1/2	\$125	30
Convexamus.	6986	0	5/8	113	50	Cratiturus.	7013	0	5/8	130	90
Convexibus.	6987	2-0	1/2	125	30	Creabimus.	7014	2–0	1/2	146	30
Convictus.	6988	2-0	5/8	130	90	Creandus.	7015	2-0	5/8	153	10
Convivamus.	6989	2-0	3/4	136	00	Creantibus.	7016	2-0	3/4	158	20
Convocamus.	6990	3-0	3/4	161	00	Creaturus.	7017	3-0	3/4	184	80
Convolatus.	6991	3-0	7/8	166	00	Crebrandus.	7018	3-0	7/8	194	00
Convomimus.	6992	4-0	3/4	188	80	Crederemus.	7019	4-0	3/4	212	20
Copiaturus.	6993	4-0	7/8	195	<b>4</b> 0	Credidimus.	7020	4-0	7/8	224	40
l	ength 2	6 Inche	s.			L	ength (	0 Inche	s.		
Copulamus.	6994	0	1/2	\$111	90	Amovendus.	6351	0	1/2	\$133	20
Coquebamus.	6995	0	5/8	114		Amplexibus.	6352	0	5∕8	138	
Coqueremus.	6996	2-0	1/2	128	00	Amplius.	6353	2-0	1/2	155	80
Coquitatus.	6997	2-0	5/8	134	90	Amputamus.	6354	2-0	5/8	162	30
Corinthius.	6998	2-0	3/4 3/4	140	00	Amtruamus.	6355	2-0	3/4	167	
Cornicatus.	6999	3–0	3/4	165	00	Amylamus.	6356	3-0	3/4	200	60
Cornutus.	7000	3-0	7/8	171	50	Amylaremus.	6357	3-0	7/8	205	
Corradimus.	7001	4-0	3/4	194	50	Amylatus.	6358	4-0	3/4	240	
Corrasus.	7002	4-0	7/8	200	60	Amylavimus.	6359	4-0	7/8	255	50

Bonds of intermediate lengths between those specified above will take proportionate prices.



Patented.

# Type F—Form 1. Price List.

ı	Length 6	Inches.			Le	ength 10	Inches.					
Code Word.	No.	Cap. B. & S. Gauge.	Size of Term. Inches.	Price per 100.	Code Word.	No.	Cap. B. & S. Gauge.	Size of Term. Inches.	Pri pe 10			
Creditamus.	7021	0	1/2	\$48 00	Cubuimus.	7057	0	1/2	\$54	20		
Crediturus.	7022	0	5/8	53 90	Cubulandus.	7058	0	5/8	60	20		
Cremabamus.	7023	2-0	1/2	49 60	Cubulatus.	7059	2–0	1/2	57	00		
Crematurus.	7024	2-0	5/8	55 70	Cubulemus.	7060	2–0	5/8	62	90		
Cremavimus.	7025	2-0	3/4	61 50		7061	2-0	3/4	68	90		
Crepabimus.	7026	3–0	3/4	65 50		7062	3-0	3/4 7/8	75	20		
Crepatus.	7027	3-0	7/8	71 30	Culpabamus.	7063	3–0	7/8	81	00		
Crepandus.	7028	4-0	3/4	70 20		7064	4-0	3/4	82	40		
Crepemus.	7029	4–0	7/8	75 50	Culpitamus.	7065	4-0	7/8	87	70		
1	Length 7	Inches.			L	ength 1	Inches	•				
Crepidatus.	7030	0	1/2	\$48 80	Cultibus.	7066	0	1/2	\$55	70		
Crepitibus.	7031	0	5/8	55 50	Cultrarius.	7067	0	5/8	61	80		
Crepidulus.	7032	2-0	1/2	51 50	Cultratus.	7068	2–0	1/2	58	90		
Crepuimus.	7033	2-0	5/8	57 60		7069	2-0	5/8	65	00		
Cribramus.	7034	2-0	3/4	63 40	Cuneabamus.	7070	2–0	3/4	70	00		
Criminamus.	7035	3-0	3⁄4	67 90	Cuneamus.	7071	3-0	3/4	77	60		
Criminibus.	7036	3–0	7/8	74 00	Cuneaturus.	7072	3–0	7/8	83	50		
Criniremus.	7037	4-0	3/4	72 90		7073	4-0	34	85	50		
Criniturus.	7038	4-0	7/8	78 40	Cuniemus.	7074	4-0	7/8		40		
	Length 8	Inches			Length 12 Inches.							
Crispamus.	7039	0	1/2	\$51 20	Cuniendus.	7075	0	1/2	\$57	30		
Crispulus.	7040	Ō	5/8	56 00		7076	0	1/2 5/8	63			
Cristatus.	7041	2-0	1/2	53 30		7077	2-0	1/2	60			
Criticus.	7042	2-0	5/8	59 10		7078	2-0	5/8	66			
Crociturus.	7043	2-0	3/4	65 20		7079	2-0	3/4	72			
Crocivimus.	7044	3-0	3/4	70 50		7080	3-0	3/4 3/4	81	40		
Cruentamus.	7045	3-0	7/8	76 00	Cursatus.	7081	3-0	7/8	85	90		
Cruralibus.	7046	4-0	3/4	76 30	Curvoribus.	7082	4-0	3/4	88	20		
Crustandus.	7047	4–0	7/8	81 50	Custodibus.	7083	4-0	7/8	93	70		
ı	Length 9	Inches.			Le	ngth 14	Inches.					
Crustemus.	7048	0	1/2	<b>\$</b> 52 50	Cutibus.	7084	0	1/2	\$60	50		
Cubebamus.	7049	0	5/8	58 60	Cycladibus.	7085	0	1/2 5/8	66	20		
Cubentius.	7050	2-0	1/2	55 30	Cyclicus.	7086	2-0	1/2 5/8	64	40		
Cuberemus.	7051	2-0	5/8	61 30	Cymindibus.	7087	2-0	5/8	70	50		
Cubicus.	7052	2-0	3/4	67 00	Cynicebus.	7088	2-0	3/4 3/4	71	50		
Cubilibus.	7053	3-0	34	72 90	Cynicus.	7089	3-0	3/4	84	80		
Cubitamus.	7054	3-0	7/8	78 60		7090	3-0	7/8	90	80		
Cubiturus.	7055	4-0	3/4	79 20		7091	4-0	3/4	90	40		
Cubueramus.	7056	4-0	7/8	84 50		7092	4-0	7/8	100	000		

Bonds of intermediate lengths between those specified above will take proportionate prices.



Patented.

# Type F—Form 2. Price List.

l	ength 6	Inches.			L	ength 1	0 Inches	i <b>.</b>		
Code Word.	No.	Cap. B. & S. Gauge.	Size of Term. Inches.	Price per 100.	Code Word.	No.	Cap. B. & S. Gauge.	Size of Term. Inches.	Pri pe 100	er
Dagnadibus.	7093	2-0	1/2	\$49 60	Decerptus.	7121	2-0	1/2	\$57	00
Damnamus.	7094	2-0	5/8	55 70	Decessurus.	7122	2-0	5/8	62	90
Damnaremus.	7095	2-0	34	61 50	Decianus.	7123	2-0	34	68	90
Damnaturus.	7096	3–0	3/4	65 50	Decidendus.	7124	3–0	3/4	75	20
Danabimus.	7097	3-0	7/8	71 30	Decimamus.	7125	3-0	7/8	81	00
Dan and us.	7098	4-0	34	70 20	Decisurus.	7126	4-0	3/4	82	40
Danantibus.	7099	4-0	7/8	75 50	Declamatus.	7127	4-0	7/8	87	70
L	ength 7	Inches.			ı	ength 1	I Inches.			
Danatus.	7100	2-0	1/2	\$51 50	Decoctibus.	7128	2-0	1/2	<b>\$</b> 58	90
Dapsilibus.	7101	2-0	5/8	57 60	Decoctus.	7129	2-0	5/8	65	00
Dardanus.	7102	2-0	3/4	63 40	Decolandus.	7130	2-0	3/4	70	00
Databimus.	7103	3–0	3/4	67 90	Decolatus.	7131	3-0	3/4	77	60
Dataremus.	7104	3–0	7/8	74 00	Decollamus.	7132	3–0	7/8	83	50
Datamus.	7105	4-0	3/4	72 90	Decondimus.	7133	4-0	3/4	85	50
Dat <b>a</b> rus.	7106	4-0	7/8	78 40	Decoriamus.	7134	4–0	7/8	90	40
l	ength 8	Inches.			Lo	ength 12	Inches.			_
Datavimus.	7107	2-0	1/2	\$53 30	Decoribus.	7135	2-0	1/2	\$60	70
Dationibus.	7108	2–0	5/8	59 10	Decremamus.	7136	2–0	5/8	66	80
Dativus.	7109	2-0	3/4	65 20	Decreturus.	7137	2–0	3/4	72	60
Daturus.	7110	3-0	3/4	70 50	Decrevimus.	7138	3–0	3/4	81	40
Deamaturus.	7111	3–0	7/8	76 00	Decubuimus.	7139	3-0	7/8	85	90
Dearmandus.	7112	4-0	3/4	76 30	Deculcamus.	7140	4-0	3/4	88	20
Dearmatus.	7113	4-0	7/8	81 50	Deculpatus.	7141	4–0	7/8	93	70
L	ength 9	Inches.			L	ength 1	4 Inches			
Deberemu <b>s.</b>	7114	2-0	1/2	<b>\$</b> 55 30	Decurrimus.	7142	2-0	1/2	\$64	40
Debatuimus.	7115	2-0	5/8	61 30	Decursurus.	7143	2-0	5/8		50
Debibimus.	7116	2-0	34	67 00	Decussamus.	7144	2-0	34	71	50
Debueramus.	7117	3–0	3/4	72 90	Dederamus.	7145	3-0	3/4	84	80
Decalvatus.	7118	3-0	7/8	78 60	Dedicamus.	7146	3-0	7/8	90	80
Decantamus.	7119	4-0	3/4	79 20	Dedimus.	7147	4-0	34	90	40
	7120	1	7/8	84 50	Dediscimus.	7148	1	7/8	i	00

Bonds of intermediate lengths between those specified above will take proportionate prices.



Patented.

## Type F—Form 3. Price List.

	Length 6	Inches.				Le	ngth 10	Inches.			
Code Word.	No.	Cap. B. & S. Gauge.	Size of Term. Inches.	Prie pe 100	r	Code Word.	No.	Cap. B. & S. Gauge.	Size of Term. Inches.	Pri pe 10	r
Dedissemus.	7149	0	1/2	\$48	60	Defricamus.	7185	0	1/2	\$55	00
Dediturus.	7150	0	5/8	54	60	Defrudatus.	7186	0	5/8	61	30
Dedocemus.	7151	2-0	1/2	50	70	Defrudemus.	7187	2-0	5/8 1/2	58	10
Dedocturus.	7152	2-0	5/8	56	50	Defrugimus.	7188	2-0	546	63	90
Dedolamus.	7153	2-0	3/4	62	60	Defudimus.	7189	2-0	5/8 3/4	70	00
Dedolendus.	7154	3–0	3/4	66	80	Defugendus.	7190	3-0	3/4	76	50
Deducendus.	7155	3-0	7/8	72	40	Defugatus.	7191	3-0	3/4 7/8	82	40
Deductus.	7156	4-0	3/4	71	60	Defugemus.	7192	4-0	3/4	84	00
Defecandus.	7157	4-0	7/8	76	80	Defunctus.	7193	4-0	7/8		00
	Length 7	Inches.		<u>'</u>		Le	ngth II	Inches.			_
Defecatus.	7158	0	1/2	\$50	20	Degandus.	7194	0	1/	\$56	50
Defecimus. Defecimus.	7159	ŏ	5/8		20	Deganaus. Degerendus.	7195	Ö	1/2 5/8	62	
Defecturus.	7160	2-0	1/2		30	Degessimus.	7196	2-0	1/2	59	
Defendimus.	7161	2-0	5/8		40	Degessimus. Degravamus.	7197	2-0	5/8		00
Defensamus.	7162	2-0	3/4	64	50	Degravamus. Degressus.	7198	2-0 2-0	78		90
Dejensumus. Defensurus.	7163	3-0			20	Degressus. Degulandus.	7199	3-0	3/4		00
Deferremus.	7164	3-0	3/4 7/8		30	Degulatus.	7200	3-0	3/4 7/8		80
Defervimus. Defervimus.	7165	4-0			20	Degustamus.	7200		/8		10
Defiamus. Defiamus.	7166	4-0	3/4 7/8	79		Deyastamas. Dehabemus.	7201	4-0 4-0	3/4 7/8		50
Dojumuo.	Length 8		· · · ·	.0			ngth 12		/ /8	02	
	Lengur	menes.				LE	1311 12	menes.		1	
Deficimus.	7167	0	1/2	\$51		Dehabuimus.	7203	0	1/2	\$58	
Defieb <b>amus.</b>	7168	0	5/8	57		Dehonestus.	7204	0	5/8		20
Definimus.	7169	2–0	1/2	54		Dehortatus.	7205	2–0	1/2	61	80
Definximus.	7170	2-0	5⁄8		20	Deintus.	7206	2-0	5/8	67	
De flandus.	7171	2-0	3/4	66		Deitatibus.	7207	2-0	3/4 3/4	73	
Deflaremus.	7172	3-0	3/4		50	Dejugamus.	7208	3–0	3/4	81	
Deflemus.	7173	3-0	7/8	77	00	Dejungimus.	7209	3–0	7/8	87	20
Defleturus.	7174	4-0	3/4	77	60	$\mid Dejurandus.$	7210	4-0	7/8 3/4	89	80
Deflevimus.	7175	4-0	7/8	82	90	Dejuratus.	7211	4–0	7/8	95	30
	Length 9	Inches.				Le	ngth 14	Inches.			
Defloritus.	7176	0	1/2	\$53	40	Dejuremus,	7212	0	1/2	\$61	20
Defluendus.	7177	0	5/8		40	Delapsibus.	7213	Ō	1/2 5/8	67	
Defluxibus.	7178	2-0	1/2	56	20	Delapsurus.	7214	2-0	1/2	65	
Deformatus.	7179	2-0	5/8	62	00	Delatorius.	7215	2-0	5/8	71	
Deformibus.	7180	2-0	3/4		20	Delavamus.	7216	<b>2</b> –0	3/4	77	
Defossurus.	7181	3-0	3/4	74		Delectemus.	7217	3-0	3/4	86	
Defremimus.	7182	3-0	7/8	79	70	Delegamus.	7218	3-0	34 34 78		00
Defrenatus.	7183	4-0	34	80	80	Delendus.	7219	4-0	34	96	
Defrensus.	7184	4-0	7/8		00	Deleniamus.	7220	4-0	7/8	101	

Bonds of intermediate lengths between those specified above will take proportionate prices.



Patented.

# Type F—Form 4. Price List.

1	Length 6	Inches.			Ľ	ength 10	Inches.		
Code Word.	No.	Cap. B. & S. Gauge.	Size of Term. Inches.	Price per 100.	Code Word.	No.	Cap. B. & S. Gauge.	Size of Term. Inches.	Price per 100.
Deletitius.	7221	2-0	1/2	\$50 70	Demissurus.	7249	2-0	1/2	\$58 1
Deleturus.	7222	2-0	5/8	56 50	Demittimus.	7250	2-0	5/8	63 9
Delibamus.	7223	2-0	3/4	62 60	Demolimus.	7251	2-0	34	70 0
Delibutus.	7224	3-0	3/4	66 80	Demoratus.	7252	3-0	3/4	76 5
Delicturus.	7225	3-0	7/8	72 40	Demorturus.	7253	3-0	7/8	82 4
Deligandus.	7226	4-0	34	71 60	Demovemus.	7254	4-0	3/4	84 0
Deligatus.	7227	4–0	7/8	76 80	Demugitus.	7255	4-0	7/8	89 0
l l	ength 7	Inches.			L	ength 11	Inches.		
Deligimus.	7228	2-0	1/2	\$52 30	Demulcemus.	7256	2-0	1/2	\$59 7
Delingemus.	7229	2-0	5/8	58 40	Demussatus.	7257	2–0	5/8	66 0
Deliteamus.	7230	2-0	3/4	64 50	Demutamus.	7258	2-0	3/4	71 9
Delitendus.	7231	3–0	3/4	69 20	Denarramus.	7259	3-0	3/4	79 0
Delphinus.	7232	3–0	7/8	75 30	Denasandus.	7260	3–0	7/8	84 8
Deluctamus.	7233	4-0	3/4	75. 20	Denasatus.	7261	4-0	3/4	87 1
Deluemus.	7234	4–0	7/8	79 90	Denasemus.	7262	4-0	7/8	92 5
L	ength 8	Inches.			Le	ength 12	Inches.		
Delutandus.	7235	2-0	1/2	\$54 40	Denatamus.	7263	2-0	1/2	\$61 8
Delutatus.	7236	2-0	5/8	60 20	Denegandus.	7264	2-0	5/8	67 5
Delutemus.	7237	2-0	3⁄4	66 00	Denegemus.	7265	2-0	34	73 4
Demeabamus.	7238	3–0	3/4	71 50	Denegatus.	7266	3-0	3/4	81 3
Demearemus.	7239	3–0	7/8	77 00	Denigratus.	7267	3-0	7/8	87 2
Demeaturus.	7240	4-0	3⁄4	77 60	Denotandus.	7268	4-0	3/4	89 8
Demeavimus.	7241	4–0	7/8	82 90	Denotatus.	7269	4-0	7/8	95 3
ı	ength 9	Inches.			Le	ength 14	Inches.		
Dementamus.	7242	2-0	1/2	\$56 20	Densamus.	7270	2-0	1/2	\$65 5
Demersimus.	7243	2–0	5⁄8	62 00	Densaremus.	7271	2-0	5⁄8	71 4
Demerserus.	7244	2–0	3/4	68 20	Densaturus.	7272	2-0	3/4	77 3
Demessus.	7245	3-0	3/4	74 00	Densavimus.	7273	3-0	3/4	86 3
Demigramus.	7246	3–0	7/8	79 70	Densendus.	7274	3-0	7/8	92 0
Deminuimus.	7247	4–0	3/4	80 80	Dentarius.	7275	4-0	3/4	96 0
Demisimus.	7248	4-0	7/8	86 00	Dentatus.	7276	4-0	7/8	101 4

Bonds of intermediate lengths between those specified above will take proportionate prices.



Patented.

## Type F—Form 5. Price List.

Length 6 Inches.						Length 10 Inches.							
Code Word.	No.	Cap. B. & S. Gauge	Size of Term. Inches.	Pri pe 10	r	Code Word.	No.	Cap. B. & S. Gauge.	Size of Term. Inches.	Pri pe 100	r		
Dentiremus.	7277	0	1/2	\$48		Depygibus.	7313	0	1/2	\$55	00		
Dentiturus.	7278	0	5/8	54		Deradendus.	7314	0	5/8	61	30		
Dentivimus.	7279	2-0	1/2	50	70	Derbetibus.	7315	2-0	1/2	58	10		
Denubendus.	7280	2-0	5/8	56		Derisibus.	7316	2-0	5/8	63	90		
Denudamus.	7281	2–0	34	62		Derisus.	7317	2–0	3/4	70	00		
Depactus.	7282	3-0	3/4	66		Derivamus.	7318	3-0	3/4	76	50		
Depalamus.	7283	3-0	7/8	72	40	Derogamus.	7319	3-0	7/8	82	40		
Depalmatus.	7284	4-0	3/4	71	60	Deruebamus.	7320	4-0	3/4	84	00		
Depasturus.	7285	4-0	7/8	76	80	Deruptus.	7321	4-0	7/8	89	00		
L	Length 7 Inches.						Length 11 Inches.						
Depensus.	7286	0	1/2	\$50	20	Desaltamus.	7322	0	1/2	\$56	50		
Deperdimus.	7287	0	5/8	56		Desciturus.	7323	Ŏ	5/8		60		
Depexurus.	7288	2-0	1/2	52	30	Descriptus.	7324	2-0	1/2	59	70		
Depicturus.	7289	2-0	5/8	58	40	Desecandus.	7325	2-ŏ	5/8		00		
Depilandus.	7290	2-0	34	64		Desecatus.	7326	2-0	34	71			
Depilemus.	7291	3-0	3/4	69	20	Desedimus.	7327	3-0	34	79	00		
Depingimus.	7292	3-0	7/8	75	30	Deserpimus.	7328	3-0	7/8	84	80		
Deplanamus.	7293	4-0	34	75		Descriptus.	7329	4-0	34	87			
Deploramus.	7294	4-0	7/8	79		Desidemus.	7330	4-0	7/8		50		
Length 8 Inches.						Length 12 Inches.							
Depolimus.	7295	0	1/2	\$51	70	Desidendus.	7331	0	1/2	\$58	10		
Deportamus.	7296	ŏ	5/8	57		Desinimus.	7332	ŏ		64			
Depravatus.	7297	2-0	1/2	54		Desistimus.	7333	2-0	5/8	61			
Depravemus.	7298	2-0	5/8	60		Desiturus.	7334	2-0	1/2		80		
Deprimimus.	7299	2-0	34	66		Desolamus.	7335	2-0	5/8	67	50		
Depromptus.	7300	3-0	3/4	71	50	Desorbemus.	7336	3-0	3/4	73	40		
Depsebamus.	7301	3-0	7/8	77	00	Desperamus.	7337	3-0	3/4	81	30		
Depsimus.	7302	4-0	34	77	60	Desperamus.  Despeximus.			7/8	87			
Depsimus. Depsurus.	7303	4-0	74 7/8	82		Despicatus.	7338 7339	4-0 4-0	3/4 7/8	89 95	80 30		
	Length 9 Inches.						Length 14 Inches.						
Depugnatus.	7304	0	1/2	\$53	40	Desponsus.	7340	0	1/	\$61			
Depulpamus.	7305	ŏ	5/8	59	40	Despumamus,	7341	0	1/2 54				
Depulsatus.	7306	2-0	1/2	56		Desputurus.	7342	2-0	5/8 1/	67			
Depulsus.	7307	2-0	5/8	62		Desputus.	7343	2-0	1/2	65			
Depungemus.	7308	2-0	78 34	68		Destinatus.	7344	2-0	5/8	71	40		
Deputandus.	7309	3-0	3/4	74		Destitutus.	7344	3-0	34	77	30		
Deputatus.	7310	3-0	7/8	79		Destructus.			3/4	86			
Deputemus.	7311	4-0	3/4	80			7346	3-0	7/8		00		
	7312	4-0	7/8	86		Desucturus.	7347	4-0	3/4	96			
Depuvimus.	1012	4-0	/8	00	w	Desudand $u$ s.	7348	4-0	7/8	101	40		

Bonds of intermediate lengths between those specified above will take proportionate prices.



Patented.

# Type F—Form 6. Price List.

Length 6 Inches.					Length 10 Inches.							
Code Word.	No.	Cap. B. & S. Gauge.	Size of Term. Inches.	Pri-	r	Code Word.	No.	Cap. B. & S. Gauge	Size of Term. Inches.	Pri pe 100	ice r	
Desudatus.	7349	2-0	1/2	\$50	70	Devertemus.	7377	2-0	1/2	\$58	10	
Desugendus.	7350	2–0	5/8	56	50	Devexus.	7378	2-0	5/8	63	90	
Desulcatus.	7351	2-0	3/4	62	60	Deviamus.	7379	2-0	3⁄4	70	00	
Desumimus.	7352	3–0	3/4	66	80	Deviaremus.	7380	3-0	3/4	76	50	
Detentatus.	7353	3–0	7/8	72		Deviaturus.	7381	3-0	7/8	82	40	
Deterius.	7354	4-0	3/4	71	60	Deviavimus.	7382	4-0	3⁄4	84	00	
Detersurus.	7355	4-0	7/8	76	80	Devitandus.	7383	4–0	7/8	89	00	
1	ength 7	Inches.				Length II Inches.						
Detexturus.	7356	2-0	1/2	\$52	30	Devitatus.	7384	2-0	1/2	\$59	70	
Detinendus.	7357	2-0	5/8	58	40	Devitemus.	7385	2-0	5/8	66	00	
Detonamus.	7358	2-0	3/4	64	50	Devolvimus.	7386	2-0	3/4	71	90	
Detondimus.	7359	3–0	3/4	69	20	Devorandus.	7387	3–0	3/4	79	00	
Detonsatus.	7360	3–0	7/8	75	30	Devoremus.	7388	3-0	7/8	84	80	
Detonsurus.	7361	4-0	3/4	75	20	Devovendus.	7389	4-0	3/4	87	10	
Detornatus.	7362	4-0	7/8	79	90	Devulsurus.	7390	4-0	7/8	92	50	
Length 8 Inches.					Length 12 Inches.							
Detorritus.	7363	2-0	1/2	\$54	40	Diaconatus.	7391	2-0	1/2	\$61	80	
Detraximus.	7364	2-0	5/8	60	20	Dianius.	7392	2-0	5/8	67	50	
Detriturus.	7365	2-0	3/4	66	00	Diatretus.	7393	2-0	3/4	73	40	
Detrivimus.	7366	3–0	3/4	71	50	Dicabamus.	7394	3-0	3/4	81	30	
Detrudimus.	7367	3–0	7/8	77	00	Dicamus.	7395	3–0	7/8	87	20	
Deturbamus.	7368	4-0	3/4	77	60	Dicantibus.	7396	4-0	3/4	89	80	
Deturpatus.	7369	4-0	7/8	82	90	Dicaremus.	7397	4–0	7/8	95	30	
1	ength 9	Inches.	·			Length 14 Inches.						
Deussimus.	7370	2-0	1/2	\$56	20	Dicavimus.	7398	2-0	1/2	\$65	50	
Deusturus.	7371	2-0	5/8		00	Dicaturus.	7399	2-0	5/8	71		
Devastamus.	7372	2–0	3/4	68		Dicendus.	7400	2-0	3/4	77	30	
Devehimus.	7373	3–0	3/4	74	00	Dictitamus.	7401	3-0	3/4	86	30	
Devellimus.	7374	3–0	7/8	79	70	Diducturus.	7402	3–0	7/8	92	00	
Devenimus.	7375	4-0	3/4	80	80	Diffamamus.	7403	4-0	3/4	96	00	
Devergimus.	7376	4-0	7/8	86	00	Differamus.	7404	4-0	7/8	101	40	

Bonds of intermediate lengths between those specified above will take proportionate prices.



Patented.

## Type F-Form 7.

Price	List.

No. 7405 7406 7407 7408 7409 7410 7411 7412 7413	Cap. B. & S. Gauge.  0 2-0 2-0 2-0 3-0 3-0 4-0 4-0	Size of Term. Inches. 1/2 5/8 1/2 5/8 3/4 3/4 3/4 3/4	\$48 60 54 60 50 70 56 50 62 60 66 80	Code Word.  Dirupturus.  Dirutus.  Discebamus.  Discupitus.	No. 7441 7442 7443	Cap. B. & S. Gauge.  0	Size of Term. Inches.	\$55		
7406 7407 7408 7409 7410 7411 7412 7413	2-0 2-0 2-0 3-0 3-0 4-0	5/8 1/2 5/8 3/4 3/4 7/8	54 60 50 70 56 50 62 60	Dirutus. Discebamus.	7442	0	1/2 5/6			
7406 7407 7408 7409 7410 7411 7412 7413	2-0 2-0 2-0 3-0 3-0 4-0	5/8 1/2 5/8 3/4 3/4 7/8	54 60 50 70 56 50 62 60	Dirutus. Discebamus.			5.6		00	
7407 7408 7409 7410 7411 7412 7413	2-0 2-0 2-0 3-0 3-0 4-0	1/2 5/8 3/4 3/4 7/8	50 70 56 50 62 60	Discebamus.				61		
7408 7409 7410 7411 7412 7413	2-0 2-0 3-0 3-0 4-0	5/8 3/4 3/4 7/8	56 50 62 60			l 2–0	1/2	58		
7409 7410 7411 7412 7413	2-0 3-0 3-0 4-0	34 34 7/8	62 60		7444	2-0	58			
7410 7411 7412 7413	3-0 3-0 4-0	34 7/8		Disjecimus.	7445	2-ŏ	34	70		
7411 7412 7413	3-0 4-0	7/8	66 80	Dispalatus.	7446	3-ŏ	34 34	76		
7412 7413	4-0		72 40	Disparemus.	7447	3-0	7/8	82		
7413			71 60	Disparibus.	7448	4-0	34	84		
	,	7/8	76 80	Dispavimus.	7449	4-0	7/8	89		
igtn /	In all an	1 /8	1 10 00	<del>-</del>					_	
	inches.				ength 11	inches.				
7414	0	1/2	\$50 20	Disponamus.	7450	0	1/2	\$56	50	
7415	0	5/8	56 20	Dispunctus.	7451	0	5/8	62		
7416	2-0	1/2	52 30	Disputamus.	7452	2-0	1/2	59	70	
7417	2-0	5/8	58 40	Disruptus.	7453	2-0	5/8	66	00	
7418	2-0	34	64 50	Dissedimus.	7454	2-0	5/8 3/4	71		
7419	3-0	3/4	69 20	Dissipamus.	7455	3-0	3/4	79		
7420	3-0	7/8	75 30	Dissiturus.	7456	3-0	3/4 7/8	84	80	
7421		3/4			1		3/			
7422	4-0	7/8	79 90	Distaremus.	7458	4-0	7/8	92		
igth 8	Inches.			Length 12 Inches.						
7423	0	1/2	\$51 70	Distentus.	7459	0	1/2	\$58	10	
		5/6					5/6			
		1/2					1/2			
		5/6					5,6			
		3/					3/			
		3/					3/			
		7/6					7/6			
7431	<b>4</b> -0	7/8	82 90	Divinandus.	7467	4-0	7/8	95		
gth 9	Inches.		,	Length 14 Inches.						
7432	0	1/2	\$53 40	Divinatus.	7468	0	1/2	\$61	20	
7433	1 -	5%					5/8	67		
7434		1/2					1/2	65		
		5,6				<b>2</b> –0	5/6			
		3/					3/			
		3/					3/			
7438		74	79 70				/4			
					1/4//4	1 3-0	7/6	1 99	(₩	
1436 7439	4-0	3/4	80 80	Divulgamus. Divulsurus.	7474 7475	3-0 4-0	7/8 3/4	92		
	4421 4422 gth 8 4423 4424 4425 4426 4426 4427 4428 4429 4431 4431 4432 4434 4434 4435 4436 4437							A21		

Bonds of intermediate lengths between those specified above will take proportionate prices.



Patented.

### Type F-Form 8.

Price List.

	Length 6	Length 10 Inches.									
Code Word.	No. Cap. B. & S Gauge		Size of Term. Inches.	Price per 100.	Code Word.	No.	Cap. B. & S. Gauge.		per		
Diximus.	7477	2-0	1/2	\$50 70	Dotalibus.	7505	2-0	1/2	\$58	10	
Docebamus.	7478	2-0	5/8	56 50	Drepanibus.	7506	2-0	5/8	63	90	
Docemus.	7479	2-0	3/4	62 60	Dromadibus.	7507	2-0	3/4	70	00	
Doctoribus.	7480	3–0	3/4	66 80	Dromonibus.	7508	3-0	3/4	76	50	
Docturus.	7481	3–0	7/8	72 40	Dubitamus.	7509	3-0	7/8	82	40	
Docueramus.	7482	4-0	3/4	71 60	Ducatibus.	7510	4-0	3/4	84	00	
Docuimus.	7483	4–0	7/8	76 80	Ducemus.	7511	4–0	7/8	89	00	
	Length '	7 Inches.			L	ength 11	Inches.				
Dolabratus.	7484	2-0	1/2	\$52 30	Ductabamus.	7512	2-0	1/2	\$59	70	
Dolandus.	7485	2–0	5/8	58 40	Ductamus.	7513	2–0	5/8	66	00	
Dolatus.	7486	2-0	3/4	64 50	Ductaremus.	7514	2–0	34		90	
Dolonibus.	7487	3-0	3/4	69 20	Ductavimus.	7515	3–0	3/4	79	00	
Domamus.	7488	3-0	7/8	75 30	Duellibus.	7516	3–0	7/8	84	80	
Domantibus.	7489	4-0	3/4	75 20	Duitatibus.	7517	4–0	3/4	87	10	
Domaremus.	7490	4-0	7/8	79 90	Duitoribus.	7518	4-0	7/8	92	50	
	Length 8	Inches.			Length 12 Inches.						
Domaturus.	7491	2-0	1/2	\$54 40	Dulcabamus.	7519	2-0	1/2	\$61	80	
Domavimus.	7492	2-0	5/8	60 20	Dulcamus.	7520	2-0	5/8	67	50	
Dominius.	7493	2-0	3/4	66 00	Dulcaturus.	7521	2-0	3/4	73	40	
Domitandus.	7494	3-0	3/4	71 50	Dulcavimus.	7522	3-0	3/4	81	30	
Domitatus.	7495	3-0	7/8	77 00	Dulcoramus.	7523	3-0	7/8	87	20	
Domitemus.	7496	4-0	3/4	77 60	Duplaremus.	7524	4-0	3/4	89	80	
Domitibus.	7497	4-0	7/8	82 90	Duplaturus.	7525	4–0	7/8	95	30	
	Length 9	Inches.			Length 14 Inches.						
Domnicus.	7498	2-0	1/2	\$56 20	Duplicamus.	7526	2-0	1/2	<b>\$65</b>	50	
Doridibus.	7499	2-0	5/8	62 00	Durabimus.	7527	2-0	5/8	71	40	
Dorimus.	7500	2-0	3⁄4	68 20	Durandus.	7528	2-0	3/4	77	30	
Dormiremus.	7501	3-0	3/4	74 00	Duraremus.	7529	3-0	34	86	30	
Dormitamus.	7502	3-0	7/8	79 70	Duratus.	7530	3–0	7/8	92	00	
Dormiturus.	7503	4-0	3/4	80 80	Durius.	7531	4-0	3/4	96	00	
Dormivimus.	7504	4-0	7/8	86 00	Dyadibus.	7532	4-0	7/8	101	40	

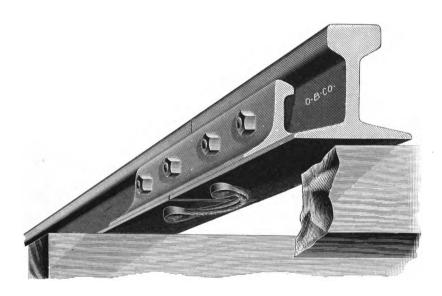
Bonds of intermediate lengths between those specified above will take proportionate prices.



#### Patented.

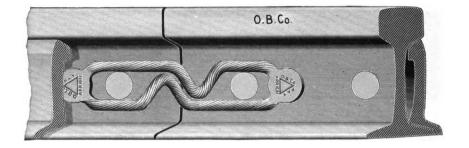


The above illustration shows a 75 lb. Tee Rail double bonded with Type A—Form 1 "All Wire" Rail Bonds.

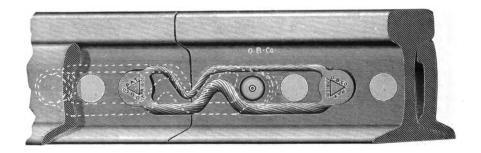


In the above illustration is shown an 80 lb. Tee Rail bonded with one Type D—Form 1 "All Wire" Rail Bond.

#### Patented.



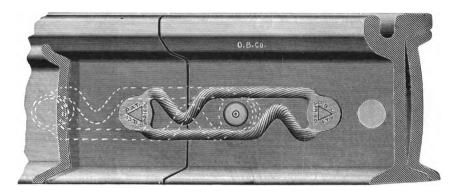
The above illustration shows a 70 lb. Tee Rail bonded with one Type F-Form 3 "All Wire" Rail Bond.



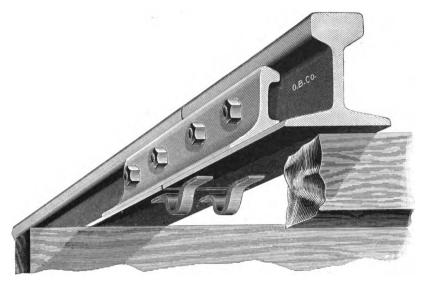
In the above illustration is shown a 70 lb. Tee Rail double bonded with Type F—Form 6 "All Wire" Rail Bonds.

### "All Wire" Rail Bond.

Patented.



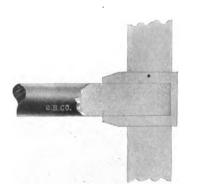
The above illustration shows a 90 lb. Girder Rail double bonded with Type F-Form 7 "All Wire" Rail Bonds.



In the above illustration is shown a 75 lb. Tee Rail double bonded with Type G-Form 1 "All Wire" Rail Bonds.

# Steel and Copper Bonding Caps.

#### Patented.





THE Steel and Copper Bonding Caps, as their name signifies, are metal caps which fit snugly over the end of the bonding wire and in the web or base of the rail. The metal in the Steel Caps is a soft, pliable quality of steel of high conductivity; the Copper Caps are made of a specially prepared copper, tempered to a degree necessary to give them the requisite mechanical strength. The method of bonding the track with them is as follows: The end of the bonding wire is passed through the hole in the rail, which is drilled slightly smaller than the outside diameter of the Cap; the Cap is then placed on the wire and entered in the rail. A few blows from a hammer fasten it into place. The crimp extending the full length of the Cap allows the shell to compress firmly over the wire, and into the rail, making a perfect air and moisture proof joint. In drilling the rail, care should be taken to make the hole the exact size to properly fit the Cap, and to ream it out so as to give the Cap free entry, removing any burrs which may be left by the drill. It is advisable, whenever possible, to drill the rail from the side from which the Cap is entered.

For cross-connecting and special bonding, the Steel and Copper Bonding Caps made in the various sizes listed, are furnished open at both ends, so as to allow the bonding wire to pass entirely through them. A special tool for driving these into the rail is provided, when desired.

# Steel Bonding Caps.

Code Word.   No.		Size of Bonding Wire B. & S. Gauge.	Diameter of Cap.	Hole in Rail.	Price per 1000
Calamariam.	1850	No. 4-0	30 inch.	18 inch.	\$34 70
Calatinam.	1258	" 3–0	19 "	9 "	33 40
Oblatrabam.	4490	" 2-0	21 '' 32 ''	5/8 "	35 60
Calcabam.	1851	" 2–0	19 ''	9 "	32 10
Calceandam.	1259	" 2–0	17 ''	1/2 "	32 00
Oblaturam.	4491	" 0	2 1	5% "	35 80
Dynamibus.	7542	" 0	5/8 "	19 "	34 70
Calceatam.	1852	" 0	19 "	9 '' If	33 50
Calescam.	1853	" 0	17 ''	1/2 "	32 00
Calfactam.	1260	" 0	15 '' 32	7 "	30 60
Ebibendus.	7543	" 1	13 "	3/8 "	30 00
Calfeceram.	1261	" 2	13 ''	3/8 "	29 10
Ebiberimus.	7544	" 3	13 ''	3/8 "	28 50
Calidariam.	1262	" 4	11 "	5 "	27 90
Caligabam.	1263	" 6	1 1 ''	5 "	27 90

# Copper Bonding Caps.

Code Word.	No.	Size of Bonding Wire B. & S. Gauge.	Diameter of Cap.	Hole in Rail.	Price per 1000
Oblectatam.	4492	No. 4-0	38 inch.	¾ inch.	\$72 20
Obleniebam.	4494	" 3–0	23 ((	11 "	69 60
Oblidam.	4496	" 2-0	21 '' 32 ''	5/8 "	61 20
Callueram.	1856	" 2-0	19 "	9 "	51 60
Calthulam.	1857	" 2–0	17 "	1/2 "	44 80
Oblidebam.	4497	" 0	3 1 ''	5/8 ''	62 60
Calvam.	1858	" 0	19 "	9 "	52 90
Calvebam.	1859	" 0	17 "	1/2 "	44 80

# Cross-Connecting Bonding Caps.

 CODE WORD.
 No.

 Derepam.
 2682—Cross-Connecting Bonding Caps, Steel

 and Copper
 Extra, per 1000, \$ 1 32

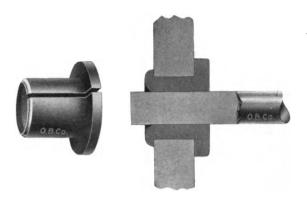
 Derepebam.
 2683—Driving Tool
 Each, 2 76

Caps to fit rails already drilled, furnished to order.

312 of an inch is allowed for a driving fit.



# Copper Bonding Sleeves.



THESE Sleeves are made of a special copper alloy of great ductility and low resistance, and when used with copper wire, make a perfect electrical and mechanical connection offering extremely low resistance to the current. They consist of a hollow slotted Sleeve having a flange at one end, and the other so shaped that when the Sleeve is driven into place in the rail it may be upset to form a head or shoulder on the opposite side of the rail. The hole in the rail is drilled 312 of an inch smaller than the outside diameter of the Sleeve so that when the Sleeve is driven into the rail it compresses over the wire, binding it firmly in place. In addition to regular bonding, these Sleeves are equally well adapted to cross-connecting and special bonding, as the bond wire extends entirely through the Sleeve.

To properly install these Sleeves a set of three special tools is required: i. e., Drift Punch, Driving and Upsetting Tools. The Drift Punch is intended to remove any burrs around the edge of the hole in the rail which may be left by the drill. It is driven lightly into the hole from the same side that the Bonding Sleeve is to enter. The Sleeve is then inserted in the rail and driven home by means of the Driving Tool. One end of the latter is slotted to allow it to clear the bond wire. After the Sleeve is in position the Upsetting Tool is applied to the tapered end of it to form a head or shoulder against the rail. A hole is provided in the end of this Tool to give clearance to the projecting end of the bond wire.

# Copper Bonding Sleeves.

Code Word.	No.	Size of Bonding Wire B. & S. Gauge.	Diameter of Sleeve.	Hole in Rail.	Price per 1000
Fortunabam.	3149	No. 4-0	35 inch.	¾ inch.	\$82 40
Fossabam.	3150	" 4-0	24 "	23 "	75 20
Foturam.	3151	" 3–0	25 '' 32	3/4 "	87 70
Foveam.	3152	" 3–0	24 '' 32	23 44	80 80
Fovendam.	3153	" 3–0	28 " 32	11 "	76 70
Fraenabam.	3154	" 2–0	23 "	11 "	82 40
Fragrabam.	3155	" 2-0	22 '' 32	21 "	75 20
Frangebam.	3156	" 2-0	31 "	5/8 "	69 80
Fraudabam.	3157	" 2–0	20 44 32	19 "	65 80
Obligabam.	4498	" 2–0	19 "	9 "	60 30
Fremebam.	3158	" 0	31 ''	5/8 ''	73 90
Fremueram.	3159	" 0	20 "	19 "	71 10
Frenandam.	3160	" 0	19 '' 32 ''	9 '' 16	65 80
Frendendam.	3161	" 0	18 " 32	17 44	60 30

# **Bonding Tools.**



Drift Punch.



**Driving Tool.** 



#### Upsetting Tool.

CODE WORD.				
Frenigeram.	3162—Drift Punch	.Each,	\$ 2	20
Friaturam.	3163—Driving Tool	**	3	30
Friaveram.	3164—Upsetting Tool	"	2	20

Sleeves to fit rails already drilled, furnished to order.  $\frac{1}{32}$  of an inch is allowed for a driving fit.

# Wightman Rail Bond.



THIS is essentially a "One Piece Rail Bond" as the connection between the tinned copper wire and rivets is so perfectly made that no resistance to the flow of the current is interposed at that point, nor is the mechanical strength of the bond lessened.

Code Word.	No.	Length between Rivet Centers.	No. 0 B. & S. Wire, per 100.	No. 2-0 B. & S. Wire, per 100.	No. 3-0 B. & S. Wire, per 100.	No. 4-0 B. & S Wire, per 100.
Adurebam.	1264	8 inches.	\$52 00	\$54 90	\$58 90	\$62 80
Adurgeam.	1265	12 ''	56 40	61 30	67 30	74 10
Adurgitam.	1266	16 ''	61 80	68 20	75 10	84 50
Adusseram.	1267	20 ''	67 30	75 60	83 50	95 40
Adusturam.	1268	24 ''	72 70	81 10	91 90	105 70
Advetatam.	1269	30 ''	80 60	91 40	104 20	122 00
Adveham.	1270	36 ''	88 90	101 30	117 60	136 80

In telegraphing, where reference is desired to be made to the size of the bonding wire, use the code word Wendehaken for "No. 0 B. & S."; Wendungen for "No. 2-0 B. & S.;" Werkproben for "No. 3-0 B. & S.;" and Werkseiden for "No. 4-0 B. & S." Gauges, as the case may be, placing it after the regular code word designating the length between rivet centers of the Bond.

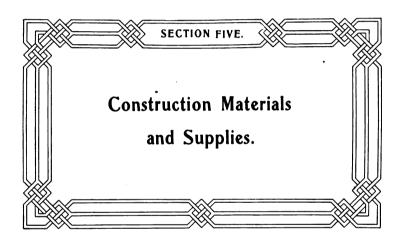
In ordering Bonds specify size of hole in rail for the rivets.

#### Channel Pins.



THESE Pins are tapered on one end, and are slightly larger than the hole in the rail, so that when seated they compress tightly on the wire and make a firm, solid joint.

Code Word.	No.	Size of Bonding Wire B. & S. Gauge	Diameter of Pin.	Hole in Rail.	Price per 1000.
Ebibitus.	7545	No. 6	5 inch.	a inch.	\$15 40
Advehebam.	1271	" 4	3/8 "	11 "	15 40
Oblimandam.	4499	" 2	15 44	7 '' 16	15 40
Advelabam.	1272	" 0	19 46	9 "	20 70
Derepturam.	2684	" 2-0	19 "	9 "	20 70
Ebitebamus.	7546	" 2-0	21 " 32	5/8 "	26 20
Derideam.	1861	" 2-0	3/4 ''	23 44	26 20
Oblimatam.	4500	" 4-0	25 "	3/4 "	26 20



#### Wood Break Strain Insulator.



THE break in this Insulator is made of thoroughly seasoned hard wood, boiled in paraffine and coated with a preservative compound. A cone shaped wedge held inside the metal cap is forced into the end of the wood, the fibres of which spread so as to fill the recess inside the cap completely. The wedging effect makes it impossible to pull the Insulator apart without first breaking the wood.

#### Goose Neck Insulator.



THIS Insulator is similar to the Wood Break Strain, listed above, except that it is provided with a boss on one end, tapped and threaded to receive a Curve Pull-Over Yoke.

CODE WORD.	NO.		
Adaucta bam.	1161—Insulator	Each,	\$ 0 33
Adayaescam	1163—Yoke % inch Forged Steel	"	20

In ordering Goose Neck Insulators state size and number of threads to the inch of Yoke they are to be used with.



#### Premier Strain Insulators.

THE metal parts of these Insulators are made of galvanized malleable iron castings, so placed in relation to each other within the insulating body partially surrounding them, that a high degree of electrical resistance combined with great strength is obtained. As a measure of extreme precaution to maintain the standard of excellence set for them, every Insulator is carefully tested both electrically and mechanically before shipping. The opening in the eye castings of the 2 and 2½ inch sizes listed below, is ½ of an inch, while in the 3 inch size it is ¾ of an inch in diameter.



Regular.

CODE WORD.  Merosam.		sulator	, 2 i	inches	in	diameter	•	Each,	\$ 0 46
Mersaturam.	4182—	"	21/2		"	"	• • • • • • • • • • • • • • • • • • • •	"	60
Merseram	4184—	66	3	4.6	46	6.6		44	92



#### With Clevis.

CODE WORD.  Metituram.		nsulator,	2	inches	in	diameter	·	.Each,	\$ 0	66
Metuebam.	4188	"	21/2	"	"	"		. "	,	77
Miculam.	4190-	44	3	"	"	"		. "	1 :	32

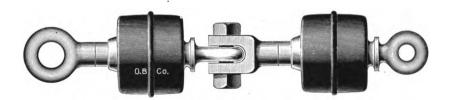
#### Premier Strain Insulators.

F the two designs of Insulators on this page, the one numbered 4192 is identical with the "Regular" on the opposite page, with the single exception that the larger of the two eyes has an opening ¾ of an inch in diameter, the other being ½ of an inch. The other form, designated as the "Combination," is a double Insulator made up of the "Large Eye" and "Clevis" types in the 2½ inch, and the "Regular" and "Clevis" types in the 3 inch sizes respectively.



With Large Eye.

CODE WORD.	NO.	,		
${\it Migraturam.}$	4192—Insulator, 2½ inches in diameter		Each,	\$ 0 79

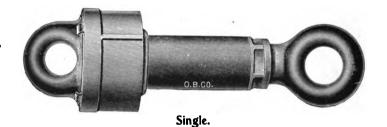


#### Combination.

CODE WORD.	NO.										
Milesam.	4194—In	sulator,	$2\frac{1}{2}$	inches	in	diameter	r	 .Each,	\$ 1	61	
Militabam.	4196—	"	3	"	"	"		 	2	32	

# Type D Strain Insulators.

THIS form of Strain Insulator is made up of Insulated Bolts similar to the Type D (page 87) with the necessary castings attached to either end and formed with eyes, to support and insulate the wires with which it is used. In the Bronze Insulators all the metal parts, with the exception of the insulated bolt, are made of bronze metal.



CODE WORD.	NO.					
Cistulam.	2125—In	sulator,	Bronze Metal	Each,	\$ 1	50
Citandam.	2126	"	Malleable Iron	"		77



#### Double.

CODE WORD.	NO.					
Degendam.	2535—Ins	sulator,	Bronze Metal	Each,	\$ 2	94
Degerendam.	2536	"	Malleable Iron	"	1	43

### Brooklyn Strain Insulators.

THE Brooklyn Strain Insulators are made in two sizes, one being suitable for use under the ordinary conditions which an insulator of this type is intended to be placed in service; the other, which is of larger dimensions and designated as "Extra Heavy," being adapted to withstand the severest strains. In the Bronze Insulators all the metal parts, with the exception of the insulated bolt, are made of bronze metal.



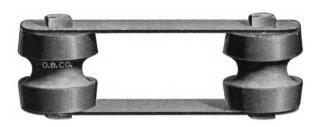
CODE WORD.	NO.				. •
Buxentiam.	2090—Ins	ulator,	Bronze Metal	Each,	\$ 2 12
Buxiferam.	2091—	"	Malleable Iron	"	1 10
Deglubam.	2537—	66	Bronze Metal, Extra Heavy	"	3 52
Cacandam.	2092-	"	Malleable Iron, " "	"	1 61



#### Double.

CODE WORD.	NO.				
Deglubebam.	2538Insu	lator,	Bronze Metal	Each,	\$ 3 11
Degluttiam.	2539—	66	Malleable Iron	"	2 20
Degravabam.	2540	"	Bronze Metal, Extra Heavy	46	5 19
Degulandam.	2541	"	Malleable Iron, " "	"	3 08

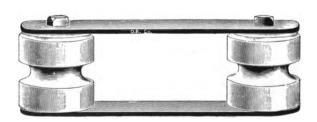
# Dirigo Break Strain Insulator.



THIS Insulator is made in two sizes, the regular size being fitted with Dirigo Insulating Spools, Catalogue No. 4201, and the extra heavy with No. 4202 Spools. The metal parts are japanned.

CODE WORD.	NO.				
Sanctam.	5701—In:	sulator,	Regular	.Each,	\$ 0 78
Sanctescam.	5702	"	Extra Heavy	. "	1 04

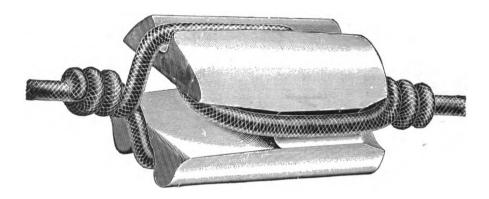
#### Porcelain Break Strain Insulator.



THE Strain Insulator here shown is fitted with Porcelain Insulating Knobs, Catalogue No. 7548, and the straps are japanned.

CODE WORD.	NO.
Accianam.	1087—Insulator

#### Porcelain Circuit Break.



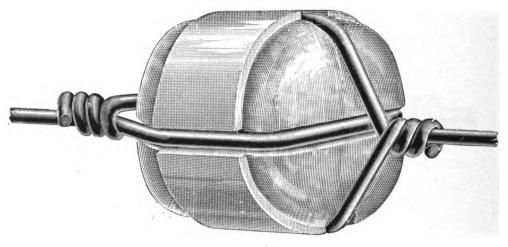
THE Porcelain Circuit Break illustrated above possesses high insulating properties and great mechanical strength, and will withstand the breaking strain of any insulated wire that may be used with it. It may also be used as a Tree Insulator, if desired, in which case the wire to be supported is passed through one of the end grooves of the Insulator. The length of the Insulator is 2% inches, the diameter 2% inches, and the groove ½ inch wide.

Approximate weight per 1000, packed, 620 pounds.

Packed 500 in a barrel.



#### Glass Circuit Break.



No. 1166.

#### Small Size.

Length 2½ inches.

Groove ½ inch wide.

Diameter 21/4 inches.

Approximate weight per 1000, packed, 850 pounds. Packed 500 in a barrel.

#### Large Size.

Length 31/4 inches.

Diameter 2¾ inches.

Groove 5/8 inch wide.

Approximate weight per 1000, packed, 1250 pounds.

Packed 250 in a barrel.

CODE WORD.				_			
Adbibam.	1166—Glass	Break,	Small	Per	1000,	\$140	40
Ecferimus.	7547—"	66	Large	"	66	220	00

# Glass Insulating Knob.



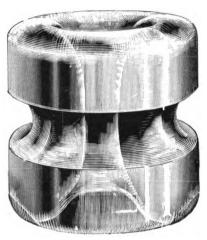
Cut Full Size.

Height 3% inches. Hole 5% inch. Diameter 2¾ inches. Groove 1 inch wide.

Approximate weight per 1000, packed, 1550 pounds. Packed 200 in a barrel.

CODE WORD. NO.

# Glass Insulating Knobs.



Height 2½ inches. Hole ¾ inch. Cut Full Size.

Diameter 2 inches. Groove 5% inch wide.

Approximate weight per 1000, packed, 550 pounds. Packed 500 in a barrel.

CODE WORD.

Adbitendam. 1168—Knob....

......Per 1000, \$49 50



Height 2½ inches. Hole ¾ inch. Cut Full Size.

Diameter 2 inches. Groove 5/8 inch wide.

Approximate weight per 1000, packed, 550 pounds. Packed 500 in a barrel.

CODE WORD.

NO.

Degunam. 2543-Knol

2543—Knob .......Per 1000, \$45 80

# Glass Insulating Knobs.



Cut Full Size.

Height 1¾ inches. Hole ¾ inch. Diameter 2 inches. Groove 5% inch wide.

Approximate weight per 1000, packed, 510 pounds. Packed 500 in a barrel.

CODE WORD. NO.

Degunebam. 2544-Knob......Per 1000, \$45 90



Cut Full Size.

Height 1½ inches. Hole ¾ inch. Diameter  $1\frac{1}{2}$  inches. Groove  $\frac{1}{16}$  inch wide.

Approximate weight per 1000, packed, 235 pounds. Packed 500 in a keg.

CODE WORD. NO.

# Porcelain Insulating Knobs.



Cut 2/3 Actual Size.

Height 3¼ inches.
Hole 1 inch.

Diameter 2½ inches. Groove ¾ inch wide.

Approximate weight per 1000, packed, 800 pounds. Packed 650 in a barrel.

CODE WORD.

NO.

Mimicam. 4200—Knob...

.....Per 1000, \$ 88 00



Cut 3/4 Actual Size.

Height  $2\frac{1}{4}$  inches. Hole  $\frac{7}{16}$  inch. Diameter 2% inches. Groove 1 inch wide.

Approximate weight per 1000, packed, 1100 pounds. Packed 350 in a barrel.

CODE WORD.

NO.

Degustabam. 2

2545-Knob .....

.....Per 1000, \$146 68

# Porcelain Insulating Knobs.



Cut Full Size.

Height 1¾ inches.

Diameter 2 inches.

Groove 5% inch wide.

Approximate weight per 1000, packed, 400 pounds. Packed 1000 in a barrel.



Height 1¾ inches. Hole 5% inch. Cut Full Size.

Diameter 1¾ inches. Groove ¾ inch wide.

Approximate weight per 1000, packed, 250 pounds. Packed 1200 in a barrel.

CODE WORD. NO.

Addicam. 1170—Knob......Per 1000, \$36 00

# Porcelain Insulating Knobs.



Cut Full Size.

Height 111 inches.

Hole 16 inch.

Diameter  $1\frac{1}{6}$  inches. Groove  $\frac{1}{16}$  inch wide.

Approximate weight per 1000, packed, 200 pounds. Packed 2000 in a barrel.

CODE WORD.

. NO.

Addicebam. 1171—Knob

1171—Knob......Per 1000, \$12 50



Cut Full Size.

Height 1¼ inches. Hole ¼ inch. Diameter 1 inch. Groove  $\frac{5}{16}$  inch wide.

Approximate weight per 1000, packed, 60 pounds. Packed 5000 in a barrel.

CODE WORD. NO.

Dehabebam. 2546—Knob......Per 1000, \$ 8 25

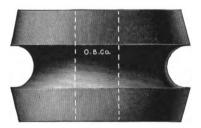
### Dirigo Insulating Spools.

THESE Spools, being made of Dirigo Insulation, provide a stronger and better insulator than either porcelain or glass, and are particularly adapted for use where a higher degree of insulation and greater strength are required. The No. 4202 shown on the following page is recommended for heavy strains and should be fitted with a 5% inch bolt or lag screw when so used.



CODE WORD. NO.

Minatam. 4201—Spool, 11/4 in. high, 2 in. in diameter, 1/2 in. hole... Each, \$ 0 26

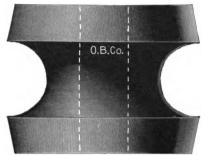


The thickness of insulation around bolt hole is  $\frac{19}{32}$  of an inch.

CODE WORD. NO.

Sardabam. 5707—Spool, 1½ in. high, 2¾ in. in diameter, 16 in. hole. Each, \$ 0 32

# Dirigo Insulating Spool.



CODE WORD.

Minandam.

No. 4202—Spool, 2 in. high,  $2\frac{1}{2}$  in. in diameter,  $\frac{2}{3}$  in. hole... Each, \$ 0 39

# Uninsulated Eye Bolt.



CODE WORD.	NO.						
Mineam.	4203—Eye	Bolt,	½ x 10 i	nches,	Plain	Each,	\$ 0 12
Minerviam.	4204— "	"	½ x 10	"	Galvanized	"	14
Erugamus.	7813—"	"	5% x 10	"	Plain	"	17
Erugavimus.	7814—"	"	5% x 10	66	Galvanized	"	20
Aderrandam.	1177 "	"	½ x 12	"	Plain	"	12
Dehauriam.	2549 ''	"	½ x 12	"	Galvanized	"	16
Adducendam.	1178—"	66	5/8 x 12	"	Plain	"	17
Dehauseram.	2550—"	66	58 x 12	"	Galvanized		22
Echibus.	7549—"	66	½ x 14	"	Plain		14
Echitebus.	7550—"	"	½ x 14	"	Galvanized	"	18
Ecstasibus.	7551—"	66	5/8 x 14	66	Plain	"	19
Edacibus.	7552—"	"	5% x 14	"	Galvanized	"	25

# Insulated Eye Bolt.



CODE WORD.	NO.							
Addocueram.	1175—Eye	Bolt,	½ x 12 in.	Porcelain	Break,	Plain	Each,	\$ 0 37
Dehiveram.	2551— ''	"	½ x 12 "	"	"	Galvanized	"	42
Dehonestam.	2552—"	6.6	5% x 12 "	"	"	Plain	"	43
Dehortatam.	2553—"	"	5% x 12 "	"	"	Galvanized	"	50
Deintegram.	2554—"	"	½ x 12 "	Dirigo	66	Plain	"	59
Dejectabam.	2555 ''	"	½ x 12 "	"	"	Galvanized		64
Dejugabam.	2556 ''	66	5/8 x 12 "	"	"	Plain	"	65
Dejungam.	2557—"	"	% x 12 "	· _"	"	Galvanized	"	72

#### Uninsulated Turnbuckle.

With Two Eyes.



CODE WORD.	NO.								
Adesuritam.	1181—Tui	mbuckle,	9 in	. opening	½ in.	Eye	Bolts,	Plain Eac	h, \$ 0 60
Dejungebam.	2558	"	9 "	- "	1/2 "	7.	"	Galv "	.78
Dejurandam.	2560—	"	9 "	"	5/8 "	"	"	Plain "	68
Dejuratam.	2561—	"	9 "	"	5/8 "	"	66	Galv "	86
Edebamus.	7553	"	12 "	"	5/8 "	"	"	Plain "	88
Edecimatus.	7554	"	12 "	"	5/8 "	"	"	Galv "	1 07
Edemus.	7555—	"	12 "	"	3/1 "	"	"	Plain "	1 19
Edentibus.	7556-	"	12 "	. "	3/4 "	"	"	Galv "	1 41

#### Uninsulated Turnbuckle.

With Eye and Hook.



CODE WORD.	NO.											
Adexpetam.	1182—Tu	rnbuckle,	9	in.	opening,	1/2	in.	Eye	Bolts,	Plain.	Each,	\$ 0 60
Dejunxeram.	2559	"		"	- "	1/2	"	7.6	"	Galv	. "'	77
Delambam.	2562	"	9	"	"	5/8	"	"	"	Plain.	. "	70
Delambebam.	2563	"	9	"	46	5/8	"	"	"	Galv	. "	89
Edicebamus.	7557	44	12	"	"	5/8	"	"	"	Plain.	. "	94
Edideramus.	7558	"	12	"	66	5/8	"	"	66	Galv	. "	1 16

### Insulated Turnbuckle.

With Insulated Eyebolt.



One of the eye bolts of the Turnbuckle is insulated from the body by a heavy covering of Dirigo Insulation.

CODE WORD.	NO.										
Adhalabam.	1183—Tu	ırnbuckle	, 6 in.	opening,	1/2	in. Eye	Bolts,	Plain	Each,	\$ 1	11
Delendam.	2571—	44	6 "	. "	1/2	". "		Galv		· 1	23
Minimam.	4205	"	6 "	"	5/8	"	"	Plain	. "	1	29
Minitandam.	4206	"	6 "	**	5/8	"	"	Galv	. "	1	38

#### Insulated Turnbuckle.

With Brooklyn.



THIS device is a combination of an Uninsulated Turnbuckle and a Brooklyn Strain Insulator. In the following list the Nos. 4197 and 4198 are made up of the Uninsulated Turnbuckle No. 2560, on page 261, and the Single Brooklyn Strain Insulators, Nos. 2090 and 2091, as may be specified. The Nos. 7559 and 7560 consist of a No. 7555 Turnbuckle fitted with extra heavy Single Brooklyn Strain Insulators, Nos. 2537 and 2092, as specified.

CODE WORD.	NO.					EA	CH.
Militiam.	4197—Tu	ırnbuckle,	Bronze Metal	Brooklyn,	Regular	\$ 2	48
${\it Militiolam}.$	4198	"	Malleable Iron	"	-"	1	. 74
Editibus.	7559	"	Bronze Metal	"	Extra Heavy	3	88
Editus.	<b>7560</b> —	"	Malleable Iron		" "		50

#### Insulated Turnbuckle.

With Dirigo Spools.



CODE WORD.	NO.									EACH.
Delavabam.	2567—Tı	ırnbuck	le, 9 in.	opening,	1/2	in.	Forked	Bolts,	Plain	\$ 1 41
Delectatam.	2568—	"	9 "	- "	1/2	"	"	"	Galv	1 58
Delegabam.	2569	66	9 ''	"	5/8	"	"	"	Plain	1 50
Delegeram.	2570—	"	9"	"	5/8	"	"	"	Galv	1 68
Edocebimus.	<b>7561</b> —	46	12 ''	4.6	5/8	"	"	"	Plain	1 74
Edolabamus.	7562	"	12 ''	"	5/8	"	"	"	Galv	1 94

#### Insulated Turnbuckle.

With Porcelain Spools.



CODE WORD.	NO.									EACH.
Aderatam.	1179—Tı	ırnbuckl	e, 9 ir	. opening,	1/2	in.	Forked	Bolts,	Plain	\$ 1 06
Delapsuram.	2564	"	9 "	- "	1/2	"	"	"	Galv	1 26
Delassabam.	<b>2565</b> —	"	9 "		5/8	"	"	"	Plain	1 16
Delatoriam.	2566	"	9 '		5∕8	"	"	"	Galv	1 36
Edolamus.	<b>7563</b> —	"	12 '		5/8	"	"	"	Plain	1 44
Edolaremus.	7564—	"	12 '		5/8	"	"	"	Galv	1 66

# Guy Wire Clamp.



CODE WORD.	NO.								EACH.
Galeaturam.	3205—Two Bo	lt Clamp	for 3	4 and	.5 1 6	inch	Strand,	Galv	\$ 0 20
Minuiscam.	4214— " "		9	⁄8 ···		•••	•••	"	22
Galeaveram.	3206—Three '		" ;		18	"		"	30
Minuritam.	4215— " '	• • •	" 3	ž "	7,	"	"	"	33

# Crosby Clip.



# These make a safe and durable fastener for either steel wire rope or strand.

CODE WORD.	NO.	EACH.
Minurriam.	4216—Clip for 3 and 1/4 inch Strand	\$ 0 25
Missillam	1917 '' '' 5 '' 36 '' ''	05
${\it Miscueram.}$	$4218-$ " " $\frac{18}{16}$ " $\frac{78}{1}$ " " "	30

# Steel Wire Strand Thimble.



CODE WORD.	NO.						PE	R 100.
Misellam.	4219—Th	imble fo	r 3 and	1/4	inch	Strand	 <sup>1</sup>	\$ 7 00
Eruaabamus.	7812—	"	18		"			
Miserabam.	4220	"	3/8		"	"	 	9 00
${\it Miseritam.}$	4221	"	$\frac{7}{18}$ and	1/2	"	"	 	11 00

### Self-Locking Pole Ratchet.



THE frame of the Ratchet is stamped out of steel and the wheel is a heavy iron casting, through the axis of which is drilled a 3% inch hole to admit the wire or strand which is to be attached to it. The Ratchet may be used either on the front or rear side of a wooden pole, as preferred, in the latter instance a hole being bored through the pole so that the wire or strand may pass through it.

# Anchor or Guy Rods.



CODE WORD.	NO.												
Missuram.	4222-A	nchor	Rod,	5/8	inch	x	6	feet,	Plain	Each.	\$ 0	57	
Mistariam.	4223-	"	"	5/8	"		6	"	Galvanized	"	•	74	
Mitigabam.	4224	"	"	5/8	"	x	8	"	Plain	"		69	
Mitram.	4225-	"	"	5/8	"	x	8	"	Galvanized	"		90	
Mixtam.	4226	. 46	"	3/4	66	x	6	4.6	Plain	"		76	
Mixturam.	4227	"	"	3/4	"	х.	6	"	Galvanized	"	1	06	
Moderabam.	4228—	"	"	3/4	"	x	8	"	Plain	"		94	
Modestam.	4229-	"	"	34	"	x	8		Galvanized	"	1	29	
Edolaturus.	7565-	44	"	1	"	x 1	0	"	Plain	"	1	89	
Edolavimus.	7566—	"	"	1	"	x 1	0		Galvanized	"		46	



THE insulated cable is equal to No. 4-0 B. & S. gauge and is 24 inches long; to either end of this are attached hinged brass clamps, with insulated handles, which will fit on wires from Nos. 0 to 4-0 B. & S. gauge.

CODE WORD. No.

Demeaveram. 2591—Circuit Jumper......Each, \$ 3 84

#### Galvanized Steel Wire Strand.



#### Single Galvanized.

Code Word.	No.	7 Wires.	Diameter in Inches.	Weight in Pounds per 100 Feet.	Approximate Breaking Strain in Pounds.	Price per 100 Feet.
Minuebam. Adhibendam. Adhinniam. Adhortatam. Deleturam. Delibabam.	4213 1190 1191 1192 2572 2573	No. 17 " 15 " 12 " 11 " 10 " 8	3 1 6 1/4 5 6 3/8 7 6 1/2	8 13 22 30 40 52	1500 2500 4200 5700 7600 9800	\$ 0 80 1 15 1 60 2 00 2 50 3 15

#### Double Galvanized.

Code Word.	No.	7 Wires.	Diameter in Inches.	Weight in Pounds per 100 Feet.	Approximate Breaking Strain in Pounds.	Price per 100 Feet.
Edomandus.	7806	No. 17	3 1 6 1/4 1 6 6 7 6 6 7 6 7 6 7 6 7 6 1/2	8	1500	\$ 0 80
Edomitus.	7807	" 15		13	2500	1 15
Eruderatus.	7808	" 12		22	4200	1 60
Eruditibus.	7809	" 11		30	5700	2 00
Eruditurus.	7810	" 10		40	7600	2 50
Erudivimus.	7811	" 8		52	9800	3 15

#### Galvanized Iron and Steel Wire.

The sizes listed below refer to the Birmingham or Iron Wire Gauge.

		No.	Weight in Pounds	Price per Pound.					
Code Word.	No.	B. W. G. Gauge.	per 100 Feet.	E. B B.	в в.	Steel.			
Adimendam.	1195	2	18½	\$ 0 10½	\$ 0 081/2	\$ 0 07			
Adimple bam.	1196	4	14	10	08	06½			
Adindam.	1197	6	10	10	08	06½			
Adindebam.	1198	8	7½	10	08	061/2			
Delibratam.	2574	10	5	10¼	081/4	0634			
Delibuebam.	2575	12	3	10½	081/2	07			

In telegraphing, where reference is desired to be made to the kind of Wire, use the code word Delibutam for "E. B. B."; Delictam for "B. B."; and Deligandam for "Steel," as the case may be, placing it after the regular code word designating the Gauge.



# Insulated Copper Wire.

#### Rubber Covered.

Single Braid.



THIS Wire is made according to specifications of the National Board of Fire Underwriters. The sizes here listed refer to Solid Wire. Stranded Wire also furnished promptly to order.

Code Word.	No.	B. & S. Gauge.	Approximate Weight Pounds per 1000 Feet.	Price per 1000 Feet.
Edomuimus.	7567	0	423	\$197 00
Edonibus.	7568	1	334	165 00
Educabamus.	7569	2	270	127 00
Educandus.	7570	3	223	103 50
Educatibus.	7571	4	185	85 00
Eductoribus.	7572	5	154	71 00
Edulibus.	7573	6	129	62 00
Edurabamus.	7574	8	82	40 00
Eduramus.	7575	10	58	31 50
Eduravimus.	7576	12	44	24 00
Effatibus.	7577	14	34	16 50

#### Weatherproof Insulation.

Triple Braid.

The list below applies to Solid Wire. Stranded Wire furnished to order on short notice.

Code Word.	No.	B. & S. Gauge.	Approximate Weight Pounds per 1000 Feet.	Price per Pound.
ffaturus.	7578	4–0	755	\$ 0 32
fferamus.	7579	3-0	625	. 32
ffercitus.	7580	2-0	495	32
fferendus.	7581	0	400	32
ffertus.	7582	1	310	32
ffervimus.	7583	2	255	32
ffictus.	7584	4	165	32
ffigiebus.	7585	6	115	32
ffindimus.	7586	6 8	77	32
ffirmatus.	7587	10	55	34
firmemus.	7588	$\overline{12}$	38	36
fflabimus.	7589	$\overline{14}$	25	39

# Copper Trolley Wire. Hard Drawn.







Round.

Figure 8.

Grooved.

		B. & S.		Approxima	Price per Pound.	
Code Word.	ord. No. Gauge.		Style.	Pounds per 1000 Feet.		
Efflandus.	7590	4-0	Round	641	3382	\$ 0 32
Ĕfflatus.	7591	3–0	"	509	2687	32
Ĕfflemus.	7592	2-0	66	403	2129	32
Effleturus.	7593	0	"	320	1688	32
Effluendus.	7594	4-0	Fig. 8	648	3421	32¾
Ëffocamus.	7595	3–0	9,	503	2655	3234
Efforandus.	7596	2-0	"	395	2085	32 ¾
Efforatus.	7597	Ō	"	320	1689	32¾
Effovemu <b>s</b> .	7598	4-0	Grooved	641	3382	32 1/2
Effovendus.	7599	3-0	"	509	2687	321/2
Effrenamus.	7600	2-0	66	403	2129	$32\frac{1}{1/2}$

# Bare Copper Wire.

#### Soft Drawn.

The sizes listed below refer to Solid Wire only; Stranded Wire or Cable furnished to order. All Copper Wire is measured by Brown & Sharpe's Gauge.

Code Word.	No.	B. & S. Gauge.	Approximate Weight Pounds per 1000 Feet.	Price per Pound.
Effricatus.	7601	4-0	641	\$ 0 32
Effricemus.	7602	3–0	509	32
Effugamus.	7603	2-0	403	32
Effulsimu <b>s.</b>	7604	0	320	32
Effumandus.	7605	1	253	32
Effumemu <b>s.</b>	7606	2	202	32
Effusurus.	7607	3	159	32
Effutitus.	7608	4	126	32
Effutuimus.	7609	4 5	100	32
Egelaremus.	7610	6	79	32
Egelaturus.	7611	7	63	32
Egelavimus.	7612	8	50	32
Egendus.	7613	10	32	321/4
Egerebamus.	7614	12	20	321/2
Egerimus.	7615	14	12.4	331/4

Can be furnished tinned to order on short notice.



### Feeder Wire Splicer.

#### For Solid and Stranded Copper Wire.



THE Splicer is made of two pieces which are in duplicate of each other, with the exception that one is slotted to permit solder being poured through it. These are clamped together and over the ends of the wires by means of two nuts threaded on to their ends. The inside of the central portion of the Splicer is somewhat larger than the wire, which allows a quantity of solder being placed there, thus insuring a perfect electrical and mechanical connection. Where this device is used for splicing Solid Wires, a stronger joint will be obtained if the wires to be joined are headed on their ends before being placed in the Splicer. For this purpose a Heading Tool is employed, which, in connection with an ordinary hammer, makes the operation a quick and easy one.

CODE WORD.	NO.										
Adinquiram.	1200-Sı	olicer f	$\mathbf{or}$	No.	0		S. Stranded	Wire	. Each,	\$ 0	90
Chalaturam.	2099—	•••	"	"	0	"	Solid	"	. "		80
Adinveniam.	1201		"	"	2-0	"	Stranded	"	. "	1	01
Chalaveram.	2100	• •	"	"	2-0	"	Solid	"	. "		78
Adipaturam.	1202—	44	"	"	3-0	"	Stranded	"	. "	1	05
Characatam.	2101—	"	"	"	3-0	"	Solid	"	. "		92
Adjectabam.	1203	66	"	"	4-0	"	Stranded	"	. "	1	04
Chartariam.	2102—	"	"	"	4-0	"	Solid	"	. "		90
Deligatam.	2576—	"	"	250	0,000	C. M	. Stranded	"	. "	1	07
Chironiam.	2103—	66	"	250	,000	"	Solid	"	. "		94
Delineabam.	2577	"	"	300	,000	"	Stranded	"	. "	1	21
Chronicam.	2104	66	"	300	,000	"	Solid	"	. "	1	06
Delinguam.	2578—	66	6,6		,000	"	Stranded	"	. "	1	19
Deliquabam.	2579—	66	"		0.000	"	66	"	. "	1	16
Deliqueram.	2580-	66	"		0.000	"	46	"	. "	1	44
Delitueram.	2582-	44	"		,000	46	66	"	. "	1	50
Detuctabam.	2584	66	"		,000	"	66	"	"	1	46
Deludam.	2585—	66	66		,000	"	66	"	4.6	ĩ	80
Molliculam.	4238—	66	"		,000	66	4.6	"	- "	ī	75
Molossicam.	4239 —	66	"		0,000	66	44	"	"	ī	72
Molueram.	4240—	66	"	1.000		66	66	"		ī	69
Cicutam.	2111—H	eading	То			d Wire		•• • • • • • • • •	. "	$\overline{2}$	

In ordering Splicers state whether they are to be used with Solid or Stranded Wires, and if Stranded, the number of wires of which it is made up.



# Mechanical Feeder Wire Splicer.

#### For Stranded Aluminum Wire.



THE Splicer is made of aluminum and consists of five parts: a center piece, two terminals, the corresponding portions of which engage with each other by means of right and left hand threads respectively, and two tapered thimbles. In using the Splicer the ends of the cable to be jointed are placed in the disconnected terminals of the Splicer and the outer wires are separated until they fill the enlarged cone shaped recess in them. One of the tapered thimbles is then slipped over the central wire of each cable sufficiently far to allow the end to project through the thimble and be bent over it, thus anchoring the latter in place. The clamping effect obtained on the wires between the thimble and the walls of the Connector holds them firmly in place. After the ends of the cable have been secured in the Splicer terminals, the latter are connected together by placing them in the outer sleeve and turning it in the proper direction.

CODE WORD.	NO.										
Momorderam.	4241-S	plicer	for	No.	0	B. & S.	Stranded	Wire.	 Each,	\$ 1	11
Monarchiam.	4242	"	"	"	2-0	"	"	".	 "	.1	28
Moneam.	4243	"	"	"	3-0	"	"	".	 "	1	44
Monendam.	4244	"	"	"	4-0	"	"	".	 "	1	60
Monitabam.	4245-	"	"	2	250,000	C. M.	66	".	 "	1	86
Monolitham.	4246	"	"	;	300,000	"	"	".	 "	2	10
Monstrabam.	4247—	"	"	:	350,000	"	"	" .	 "	2	40
Montatam.	4248-	"	"		400,000	"	66	".	 "	2	58
Montiferam.	4249	"	"	į.	500,000	"	4.6	".	 "	2	74
Montosam.	4250-	"	"	(	600,000	"	"	".	 "	2	98
Morabam.	4251—	"	"	•	700,000	66	"	" .	 "	3	26
Moraturam.	4252-	"	"	,	750,000	"	"	"	 "	3	46
Moraveram.	4253	"	"		800,000	"	"	".	 "	4	36
Morbiferam.	4254	"	66		900,000	"	"	".	 "	4	80
Mordebam.	4255—	"	"	1,	000,000	"	"	".	 "	5	<b>4</b> 8

In ordering Splicers state the number of wires of which the Conductor Cable is made up, and whether they are Concentric or Rope Laid.



#### Soldered Feeder Wire Strain Ear.



THIS Ear is intended for attachment to feeder wires by means of solder, for the purpose of guying them. The sizes listed are for Stranded Wire, but the Ear can also be furnished for Solid Wire to order.

CODE WORD.	NO.										
Mulierabam.	4271—S	train	Ear		No.	0	B. & S.	Stranded	Wire	. Each,	\$ 0 36
Mullandam.	4272-	66	44	"	66	2-0	"	"	"	. "'	36
Delumbabam.	2587	"	"	".	"	3-0	"	66	"	. "	37
Delutandam.	2588—	66	66	"	"	4-0	44	"	"	66	37
Delutatam.	2589—	66	"	"	250	,000	C. M.	"	"	66	40
Demeabam.	2590	"	"	46		.000	66	66	"	66	40
Mullatam.	4273—	"	66	66		.000	66	66	"	66	40
Mulleolam.	4274-	66	"	"		.000	"	"	"	66	$\tilde{42}$
Mulseam.	4275	66	44	66		,000	"	66	66	66	$\overline{41}$
Multicomam.	4276—	66	"	44		,000	66	66	"	66	45
Multiferam.	4277-	"	"	"		,000	66	66	"	66	49
Multinodam.	4278—	66	46	46		,000	66	66	"	4.6	53
Multinumam.	4279—	4.6	66	"		.000	66	46	"	66	60
Multisciam.	4280	46	46	46		.000	66	66	66	"	62
Multiviam.	4281	"	44	"	1,000		66	"	"	66	67

In ordering Strain Ears state whether they are to be used with Solid or Stranded Wires, and if Stranded the number of wires of which it is made up.

#### McIntire Soldered Connector.



The ends of the wire are passed through the Connector, headed over and then soldered into it.

CODE WORD.	NO.								
Adjubebam.	1206-0	Connector	r for	No.	0	B. & S.	Wire	Each, \$	0 30
Adjubendam.	1207	"	66	4.6	2-0	"	66		31
Adjugabam.	1208	"	"	"	3-0	"	66		33
Adjungam.	1209	"	66	66	4-0	"	4.6		34

# Mechanical Feeder Wire Strain Clamp.



THIS Clamp is equally suitable for use with either copper or aluminum cable. The sizes listed below refer in each case to the cross-sectional area of the cable, and not to its capacity.

CODE WORD.	NO.											
Mundigeram.	4282-	Strain				0	B. & S.	Stranded	Wire.	.Each,	\$ 0	91
Munerandam.	4283 -	. "	"	"	"	2-0	66	66	"	. "		93
Munerariam.	4284-	- "	"	"	"	3-0	"	"	"	. "		94
Muneratam.	4285-	_ "	"	"	"	4-0	66	"	"	. "		96
Mungendam.	4286-	- 66	- 66	"	250	,000	C. M.	"	**	. "	1	02
Muniebam.	4287-	_ "	66	"	300	.000	46	"	"	4.6	1	04
Murcidam.	4288	- "	"	"	350	,000	"	66	"		1	06
Murream.	4289-	_ "	"	"		,000	66	4.6	"	66	1	08
Murriendam.	4290-	. "	"	"	500	.000	44	46	"	66	1	14
Murritam.	4291-	_ "	"	"	600	,000	66	6.6	"	66	1	16
Murtatam.	4292-	- "	"	64		,000	44	4.6	"	44	1	19
Mussabam.	4293-	- "	66	"		,000	"	66	"	66	ĩ	$\overline{21}$
Mussaturam.	4294-	. "	"	"	800	,000	66	66	"	66	1	28
Mussaveram.	4295-	. "	66	46	900	,000	66	44	"	66	ī	30
Mustelatam.	4296—	. "	"	"	1,000		"	"	"	66	ĩ	28

In ordering Strain Clamps state whether for Copper or Aluminum Cable, and if the latter, state the outside diameter, and whether Concentric or Rope Laid.

# Telephone Twist Connector.



THIS form of Connector is intended for splicing hard drawn copper telephone wires. The ends of the wire are passed through the Connector and bent over, after which three and one-half turns are given to the latter by means of splicing clamps. The Combination Splicing Clamp, listed in the Tool Section of this Catalogue, is especially suited for this work.

CODE WORD.	NO.												
Mutabam.	4297(	Connector	for	No.	10	B.	& S.	Wire	 	. Per	100,	\$14	00
Mutatoriam.	4298—	44	"	"	12		"	"	 <b>.</b> .	. "	"	14	00
Mutaturam.	4299	"	"	"	14		"	"	 	"	"	14	00

# Tee Wire Connector.



CODE WORD.	NO.								EACH.
Mutaveram.					. 6			Wire	
Mutescebam.	4301-	"	"	"	4	"	"	"	34
Mutiam.	4302	"	"	"	2	"	"	66	36
Dementabam.	2592—	"	"	"	0	"	"	"	36
Demersuram.	2593—	"	.66	"	2-0	66	"		36
Demessam.	2594—	66	4.6	"	3-0	"	"	46	42
Demigrabam.	2595-	"	"	"	4-0	66	"	66	42

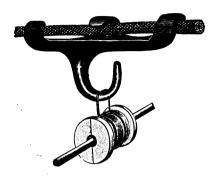
In ordering Tee Connectors observe that the sizes of wires as listed are for the main wire, and the size of the branch wire desired should be specified.

# Two=Way Wire Connector. With Round or Square Head Screws.



CODE WORD.	NO.										EACH.
Adjuveram.	1214—	Connecto	r for	No.	61	B. & S.	Wire,	Round	H'd	Screws	\$ 0 14
Adjutatam.	1213	4.6	44	66	4	"	"	4.6	"	"	16
Adjutandam.	1212-	"	66	"	2	44	"	66	"	"	16
Adjunxeram.	1211—	"	4.6	"	Ō	66	66	66	"	"	18
Mutilabam.	4303-	"	66	"	2-0	66	66	"	66	"	20
Muttiendam.	4304	66	66	"	3-0	4.6	"	44	"	"	23
Muttitam.	4305—	44	"	"	4-0	"	66	44	"	"	24
Mutuitabam.	4309—	4.6	46	"	Ŏ	46	46	Square	"	"	26
Myricam.	4310—	66	66	"	2-0	66	"	- 4-66	"	"	28
Myrteam.	4311	66	66	"	3-0	66	44	66	66	"	$\overline{31}$
Mystam.	4312-	"	"	"	4–0	66	"	"	"	"	32

### Span Wire Clip. For Telephone Wires.



THE Clip here shown consists of a malleable iron casting and a two-part porcelain insulator. A hole is provided through the center of the insulator, through which the telephone wire to be supported is passed. The sizes as listed refer to the diameter of the hole in the insulator.

CODE WORD.	NO.		EACH.
Egesturus.	$7616 - \frac{3}{16}$ inch	opening	\$ 0 20
Ejaculamus.	7617—¼ "	46	20
Eieceramus.	7618-3/4 "	"	20

### Allen Soldering Stick.



It is put up regularly in round sticks, 6 inches long and 1 inch in diameter, in individual wooden boxes. It is applied by simply rubbing the stick on the joint when heated. This causes the solder to adhere firmly, and makes a perfect joint without in any way corroding the wire or affecting the insulation.

CODE WORD.	NO.	EACH.
Disquiram.	2853—Soldering Stick	\$ 0 24

### Insulating Tapes.



THE Buckeye brand of Friction Tape and Splicing Compound is our own special one and will fill all requirements where a fair quality of goods at low prices is desired.

CODE WORD.	NO.								
Aspectabam.	1685—Buckeye,	White,	3/4	inch	wide,	Per	Pound,	\$ (	66
Aspellam.	1686— "	Black,	3/4	"	"	"	"	•	60
Aspersuram.	1688— "	Splicing Compound,	3/4	"	"	"	46		94
Disponam.	2848—Manson,	White,	3/4	66	"	66	"	1	. 10
Mysticam.	4313— "	Black,	1/2	4.6	6.6	"	66	1	. 10
Disponebam.	2849— "	"	3/4	"	66	"	"	Ĩ	10
Nablizabam.	4314— "	"	1%	44	"	"	"	1	10
Nanciebam.	4315-Grimshaw		3/4	66	66	"	66	1	30
Nandam.	4316— "	Black,	3/4	4.6	"	"	66	1	40
Narinosam.	4317— "	"	$1\frac{7}{2}$	66	66	"	66	Ĩ	40
Narrabam.	4318-Okonite,	44		66	"	66	66	1	50
Ejectandus.	7619—P. & B. W	eatherproof.	34 34	"	66	46	66		70
Emicatus.	7805— "		1 ~	"	4.6	"	"		70

### Highland Soldering Paste.

Absolutely free from acid or any ingredient injurious to insulation.

CODE WORD.	NO.			
Dispuleram.	2850-Two ounce	Box	. Each,	\$ 0 40
Dispunctam.	2851—One pound	Can	. "	1 90
Disputabam.	2852—Five ""	Can	. "	9 50

### Yeager's Soldering Salts.

CODE WORD.	No.			
Aspuendam. Aspueram.	1692—One pound 1693—Five "	Bottle		\$ 0 75 3 60
Aspaeram.	1030—LIVE	**	•	9 <b>0</b> 0

### Half and Half Solder.



This is strictly Half and Half Solder, and warranted equal to the best on the market.

CODE WORD.	NO.				
Aspilitam.	1689—Bar	Per	Pound,	<b>\$</b> 0	48
Aspirabam.	1690—Triangular	"	"		50
Asportabam.	1691—Wire	"	"		50

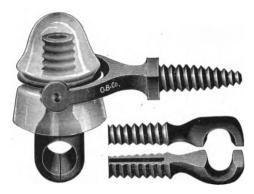
### Aluminum Solder.



In the use of Aluminum Solder the chief difficulty encountered is the presence of a thin film of oxide of aluminum, which prevents close and intimate contact of the solder with the aluminum when applying the former in a fuse state. This coating or film is refractory, not easily dissolved and forms rapidly under the influence of the air, making it necessary to observe the following directions. The surfaces of the aluminum pieces where they are to be united must be made absolutely clean and bright. This may be done with a file or emery cloth, but if this is not possible the aluminum pieces may be then dipped into nitric acid diluted with three times its bulk of hot water and with enough hydrofluoric acid added to it to make the solution act on the surface of the metal; this action being noted by the evolution of gas bubbles.

Heat is next applied to the aluminum pieces and when they are sufficiently hot to melt the solder, rub the surfaces to be united with a bar of Aluminum Solder until thoroughly coated. The film of oxide of aluminum will instantly present itself on the surface of the solder thus applied, and this must be immediately wiped or scraped off thoroughly before the solder cools, doing this with a bar of the Aluminum Solder by again rubbing it gently over the surfaces so that it will join with, but not remove, the previous coating. Then place the aluminum pieces together in the manner the union is to be made and reheat them until the solder remelts, after which allow them to cool off, removing any excess of the solder by wiping it off with a cloth while still hot.

### Holmes Tree Insulator.



THE insulation is supplied by a double petticoated glass insulator which pivots in a malleable iron holder. This arrangement permits the glass insulator to always set in an upright position regardless of the slant of the limb or tree to which it is attached by the threaded end of the holder, as shown. The casting in which the line wire is directly secured is made in halves, with the upper end threaded. These clamp together and over the wire by screwing them into the glass insulator.

CODE WORD.	NO.	EACH.
Nascentiam.	4321—Tree Insulator, for 1/8 in. and smaller diameters of Wire	\$ 0 54
Nasiternam.	4322— " " 1¾ " " " " " " "	64

### Wooden Tree Insulator.



Made in halves of seasoned hard wood, hollowed out in the center to fit over the wire, and saturated with an insulating compound.

CODE WORD.	NO.											EACH.
Demissuram.	2600—T	ree	Insulator,	12	inches	long,	5/8	inch	hole.	 	. <b>.</b>	 \$ 0 18
Demittebam.	2601—	"	"	18	"	"	5/8	"	"	 		 26
Demoliam.	2602	"	4.6	12	"	66	3/4	"	"	 		 18
Demoratam.	2603—	"	"	18	"	"	3/4	66	6.6	 		 26
Demordam.	2604-	"	"	12	"	4.6	7/8	"	"	 		 18
Demordebam.	2605—	"	"	18	4.6	66	7/8	"	"	 		 26
Demorturam.	2606—	"	"	12	"	46	ĺ	"	"	 		 18
Demovebam.	2607	"	44	18	"	66	1 .	66	"	 		 26
Dempseram.	2608	"	46	12	66	"	ī 1/8	66	66	 		 22
Demugitam.	2609—	"	44	18	4.6	4.6	$\overline{1}_{8}^{''}$		66	 		 29
Demulcebam.	2610-	66	44	$\overline{12}$		"	14	66	66	 		 22
Demulctam.	2611	"	46	18	66	66	ī 🐼	"	66	 		 29
Eiiceramus.	7620—	"	"	12	66	"	$\overline{1\frac{7}{2}}$	66	"	 		 33
Ejulabamus.	7621—	"	"	18	44	"	1½		44	 		 36

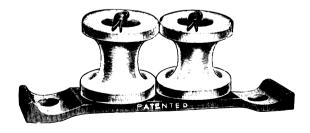
### Swinging Tree Insulator.



THE insulating pieces in this style of Tree Insulator are made of porcelain, and so arranged as to easily admit the wire. It is suitable for use with wires up to \(^3\_4\) of an inch in diameter.

CODE WORD.	NO.	EACH.
Demussatam.	2612—Tree Insulator	. \$ 0 34

### Simplex Tree Insulator.



Made of malleable iron, galvanized, with porcelain insulators which are free to turn. Will take wire † of an inch in diameter.

CODE WORD.	NO.	EACH.
Admiseram.	1222—Tree Insulator	<b>\$</b> 0 34

### Victor Tree Insulator.



THIS is a split porcelain Insulator, the two halves of which are secured together by a tie wire by which the Insulator is also supported.

CODE WORD. NO.

### Wire Carrier.



THIS device is designed as a carrier and insulator for heavy feeder wires. The top clamp, through which the suspension or tie wire passes, is pivoted on the body and can be permanently set at any desired angle. The glass insulating pieces are made in halves and are detachable.

CODE WORD. NO.

### Wire Holder.



THE Wire Holder is similar in design to the Wire Carrier on the opposite page, but can be bolted or lagged to the support. Either of these articles make excellent tree insulators.

 CODE WORD.
 NO.

 Admulcebam.
 1228-1
 inch opening.
 Each, \$ 0 55

 Admugiam.
 1227-11/4
 " 70

### Cook Feeder Wire Sheave.



THIS device is intended to facilitate the stringing of heavy feeder wires or cables after the poles and cross-arms have been put up. In using the Sheave, it is slipped over the top of an insulator pin, and the feeder wire is passed over the pulley of the Sheave. By placing a Sheave on each pole, the wire or cable may be drawn over a number of cross-arms at one time with ease, and without injury to the insulation of the wire. The groove of the pulley will take feeder wires up to 15% inches outside diameter.

CODE WORD. NO.

Ejulaturus. 7623—Feeder Wire Sheave......Each, \$ 1 65

### Feeder Wire Insulator.

### Top Bearing.

Form 1.



In the Form 1 Insulator shown above, the feeder wire can be secured firmly in place by means of a clamping piece and ring nut, as the illustration shows. The entire lower part of the Insulator is made of Dirigo Insulation, which extends into the body casting and surrounds the top of the insulator pin used in connection with it. It is threaded to fit standard sizes of insulator pins.

CODE WORD.	NO.
Ejulavimus.	7624—Insulator, Bronze Metal, for 11/8 inch and
	smaller diameters of Feeder Wire Each, \$ 2 02
Ejulitamus.	7625—Insulator, Mall. Iron, for 11/8 inch and
	smaller diameters of Feeder Wire " 1 11

In ordering Insulators state the outside diameter of Feeder Wire with which they are to be used.



### Feeder Wire Insulator.

### Top Bearing.

Form 2.



THE Feeder Wire Insulator illustrated above consists of a shell of malleable iron, in which is moulded Dirigo Insulation, double petticoated, and threaded to fit standard sizes of insulator pins. The cap of the Insulator is locked in position when in place, but can be readily removed to admit the wire.

CODE WORD.	NO.
Adnectam.	1229—Insulator for 1½ inch and smaller diameters of
	Feeder Wire
${\it Ejurabimus}.$	7626—Insulator for 2 inch and smaller diameters of
•	Feeder Wire "1 26

In ordering Insulators state the outside diameter of Feeder Wire with which they are to be used.



# Feeder Wire Insulator. Top and Side Bearing.

Form 1.



THIS Insulator is a duplicate of the "Side Bearing," illustrated on page 284, with the addition of a receptacle on the top to support the feeder wire. This receptacle is made to accommodate the different diameters of wires as listed below. The upright prongs, being of malleable iron, may be bent down over the feeder wire to secure it in place. Will fit standard sizes of wood and iron insulator pins.

CODE WORD. NO.

Demutabam. 2613-Insulator for 1½ inch and smaller diameters of

Feeder Wire...... Each, \$ 0 84

## Feeder Wire Insulator. Top and Side Bearing.

Form 2.



THE Insulator here shown is of the "All Composition" type, being made entirely of Dirigo Insulation. It is equally suitable for straight line or corner suspension, the top groove being ordinarily used for the former, and the side groove for the latter. In either case the feeder wire is secured in place by means of a tie wire. The Insulator is threaded to fit standard sizes of wood and iron insulator pins.

CODE WORD. NO.

## Feeder Wire Insulator. Side Bearing.

Form 1.



THIS form of Feeder Wire Insulator is particularly adapted for use on corner construction, on account of the feeder wire being supported at the side of the Insulator and close to the cross arm, thus placing the strain on the insulator pin to the best advantage. It consists of a shell of malleable iron, into which is moulded Dirigo Insulation, petticoated and threaded to fit the standard size of insulator pin.

CODE WORD.

Cadendam. 2095—Insulator for 1½ inch and smaller diameters of

Feeder Wire..... Each, \$ 0 79

## Feeder Wire Insulator. Side Bearing.

Form 2.



THE Form 2 Feeder Wire Insulator illustrated above was designed for use where a greater degree of insulation is required than is provided in the Form 1 described on the opposite page. The insulation, which is Dirigo, is moulded in the malleable iron outer shell, and threaded to fit standard sizes of wood and iron insulator pins.

CODE WORD. NO.

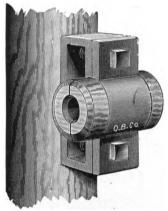
Scalpseram. 5731-Insulator for 11/4 inch and smaller diameters of

Feeder Wire..... Each, \$ 1 16

### Ricker Feeder Wire Insulator.

#### Patented.

### Forms 1 and 2.





Form 1.

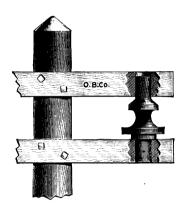
Form 2.

THE Form 1 Insulator illustrated above is intended for supporting feeder wires to wood poles, while the Form 2 is intended for use where the wire is to be supported from the horizontal arm of pole brackets. The necessary insulation is afforded by a hardwood sleeve, which is supported between malleable iron clamping pieces. In the Form 1 Insulator the castings are bolted directly to the side of the pole by means of lag screws, while in the Form 2 these castings form a sleeve which fits tightly over the horizontal arm of the pole bracket.

CODE WORD.	NO.										
Semitactam.	5786—Form	1 Ins	ulator,	7/8	inch	opening	. <b></b>				\$ 1 08
Semiustam.	5787—"	1		11/4	"	- "				. "	1 08
Semivivam.	5788 ''	1	"	15/8	"	"				. "	1 08
Semoturam.	5789—"	2	4.6	7/8	"	"	11/4	inch	pipe.	. "	1 32
Seniculam.	5790 ''	2	"	11/4	"	"	11/4	"	* · · · ·	. "	1 32
Sensatam.	5791—"	2	"	15/8	"	4.6	14	"	"	. "	1 32
Senseram.	5792—"	2	"	7/8	"	"	11/2	"	"	. "	1 38
Silendam.	5824—"	2	"	1¼	"	"	11/2	"	" .	. "	1 38
Silentiam.	5825— ''	$\bar{2}$	6.6	15/8	"	"	11/2	44	"	. "	1 38
Silescam.	5826 ''	$\bar{2}$	"	7/8	"	"	$\bar{2}^{'}$		".	. "	1 43
Silueram.	5827 ''	2	"	14	4.6	4.6	2	4.6	"	. "	1 43
Silvam.	5828— ''	2	"	1 1/8	"	"	2	"	".	. "	1 43

### Grover Corner Insulator.

#### For Feeder Wires.

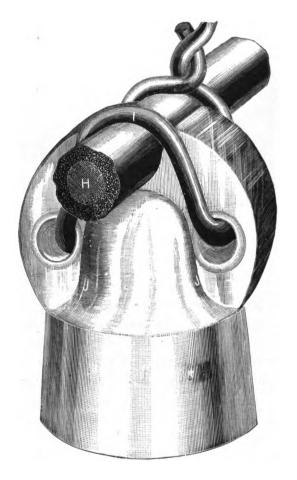




THE Grover Corner Insulator, as its name implies, is intended for supporting and insulating heavy feeder wires at corners or angles where sharp turns are made. Its construction and method of use are indicated in the above cuts. In practice it is supported between two wooden cross arms, which are bored with 1½ inch holes to receive the ends of the Insulator. It can be used with the heaviest feeder wires, and, on account of being supported at both ends, will withstand very severe strains. The body of the Insulator is a malleable iron casting, which is covered with a thick layer of Dirigo Insulation. This covers both ends and also extends under the flanged portion of the Insulator, as shown in the cross-sectional view above.

CODE WORD. NO.

## Columbia Glass Insulator. Double Petticoat, Top Groove.



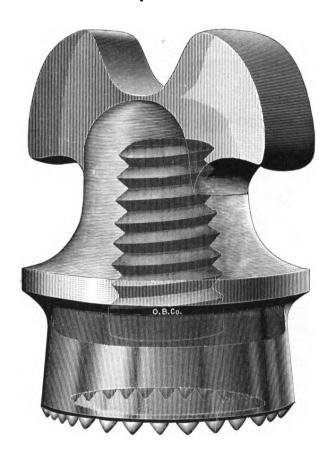
Approximate	weight,	each	40 ounces.
44			2890 pounds.
		Packed 78 in a barre	el.

CODE WORD. NO.

Adnectebam. 1230-Insulator for 11/4 inch and smaller diameters of

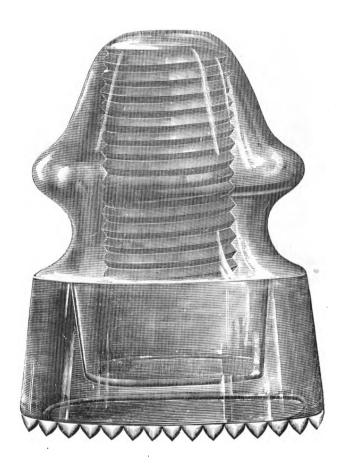
114 00

## Cable Glass Insulator. Top Groove.



Approximate	e weight,	eachper 1000, packedPacked 100 in a barrel.	
CODE WORD.	NO.		
Adobruam.		ator for $1\frac{1}{2}$ inch and smaller diam Feeder Wire	
Nauseabam.	4328Insu	ator for 2 inch and smaller diam	eters of

## Glass Insulator. Double Petticoat, Extra Large Groove.

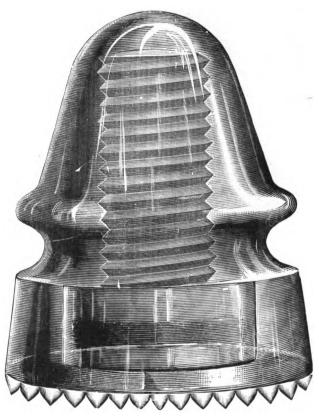


Approximate	weight,	each			20 ounces.
"	4.6	per 1000,	packed		1400 pounds.
		Packed	l 200 in a barrel	•	

CODE WORD. NO.

Adobruebam. 1232—Insulator for No. 4-0 B. & S. Feeder Wire.... Per 1000, \$66 50

## Glass Insulator. Double Petticoat, Deep Groove.



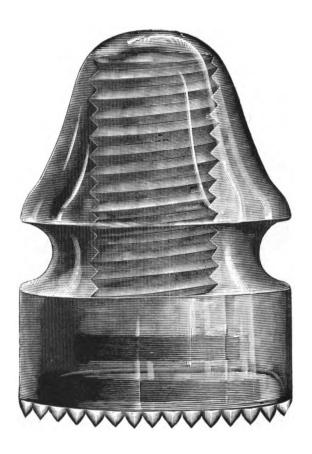
•		· · · · · · · · · · · · · · · · · · ·	
Approximate	weight,	each	20 ounces.
"	"	per 1000, packed	1400 pounds.
		Packed 200 in a barrel.	

CODE WORD. NO.

Adoleam. 1233—Insulator for No. 0 B. & S. Feeder Wire...... Per 1000, \$66 50



## Glass Insulator. Deep Groove.

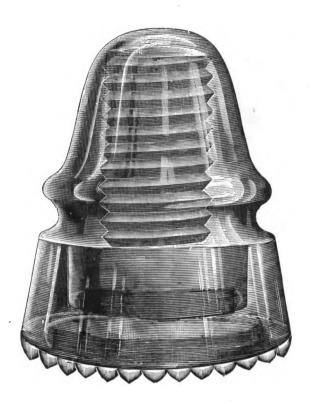


Approximate	weight,	each	17 ounces.
"	"	per 1000, packed	1200 pounds.
		Packed 250 in a barrel.	

CODE WORD. No.

Adolueram. 1234—Insulator for No. 0 B. & S. Feeder Wire......Per 1000, \$59 70

## Pony Glass Insulator. Double Petticoat, Deep Groove.



This Insulator may be used with any insulator pin having a standard size threaded end.

Approximat	e weight, each
CODE WORD.  Denarrabam.	No. 2614—Insulator for No. 4 B. & S. Insulated and Telephone Wires

## Pony Glass Insulator. Standard.

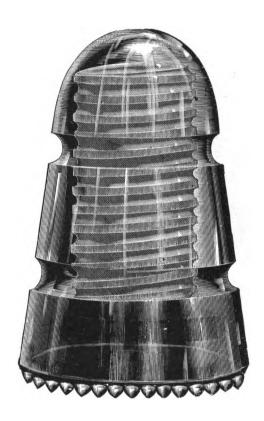


This Insulator may be used with any insulator pin having a standard size threaded end.

Approximate	e weight, each	
CODE WORD.  Denasandam.	No. 2615—Insulator for Telephone WiresPer 1000,	\$27 00



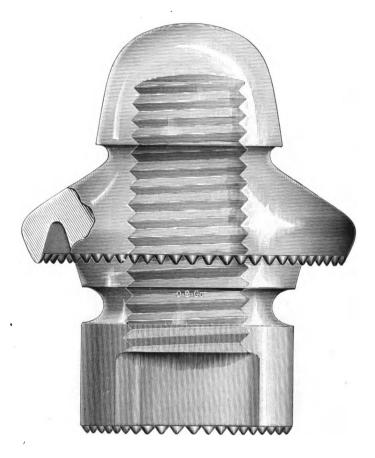
### Pony Glass Insulator. Double Groove.



This is a pony size of Transposition Insulator and may be used with any insulator pin having a standard size threaded end.

Approximate	weight,	each10 <sup>2</sup> / <sub>3</sub>	ounces.
"	"	per 1000, packed795	pounds.
		Packed 400 in a barrel.	

### Transposition Glass Insulator.

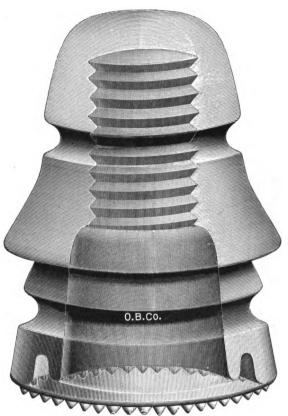


THIS Insulator requires a special pin to properly support it, and the No. 7683 Pin listed on page 316 is especially recommended for this purpose.

CODE WORD. NO.

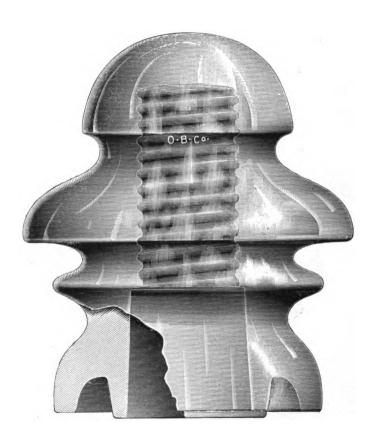
Denatabam. 2616—Insulator for Telephone Wires...... Per 1000, \$154\_00

## Transposition Glass Insulator. Double Petticoat.



Approximate	e weight, each
CODE WORD.  Ejuratus.	NO. 7628—Insulator for Telephone WiresPer 1000, \$130 60

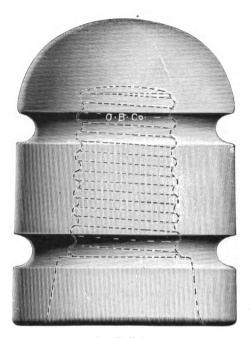
### Transposition Glass Insulator. Double Petticoat.



Approximate	weight,	each		28 ounces.
" "	"	per 1000,	packed	2250 pounds.
		Packed	100 in a barrel.	

CODE WORD. NO.

### Pony Porcelain Insulator. Double Groove.



Cut Full Size.

THE Porcelain Insulator here illustrated, as well as those shown on the following pages, is made of a special high grade of brown porcelain, which is tougher and stronger than glass, and also a superior insulating material. The Insulator listed below is a pony size of Transposition Insulator, and may be used with any pin having a standard size threaded end.

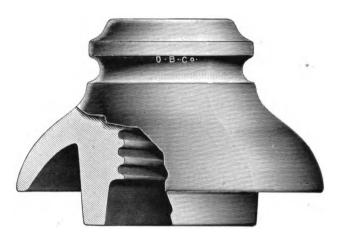
	"	, each	
CODE WORD.	NO.		

Elapsus.

7630 Insulator for Telephone Wires...... Per 1000, \$31 00

### Pony Porcelain Insulator.

### Double Petticoat.



Cut Full Size.

THIS Insulator may be used with any insulator pin having a standard size threaded end. It is regularly furnished in brown porcelain.

${\bf Approximate}$	weight,	each	7 ounces.
"	"	per 1000, packed50	0 pounds.
	1	Packed 500 to 750 in a barrel.	

### Pony Porcelain Insulator.



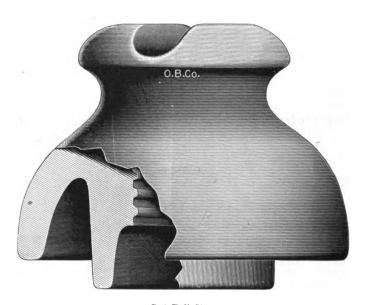
Cut Full Size.

THIS Insulator is furnished in brown porcelain and is adapted to fit any insulator pin having a standard size threaded end.

Approximate	weight,	each	7 ounces.
"	"	per 1000, packed	500 pounds.
		Packed 750 in a barrel.	



### Double Petticoat.



Cut Full Size.

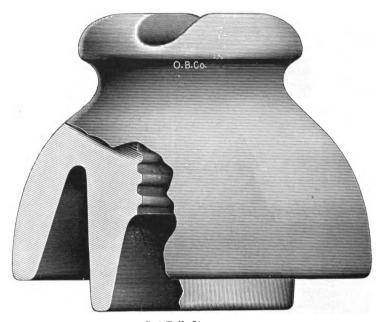
THIS Insulator is made of brown porcelain and may be used with any pin having a standard size threaded end.

Working Voltage	3,000.
Test Voltage	30,000.
Diameter	inches.
Height	
Width of Top Groove	"
" " Side " … ½	. "

Approximate	weight,	each	12 ounces.
"	"	per 1000, packed	1035 pounds.
		Packed 300 in a barrel.	_

CODE WORD. NO
---------------

### Porcelain Insulator. Double Petticoat.



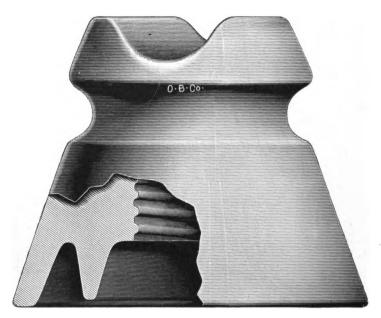
Cut Full Size.

THE Insulator illustrated above is made of brown porcelain and may be used with any pin having a standard size threaded end.

Working Voltage	4,000.
Test Voltage	30,000.
Diameter	inches.
Height31/4	4.6
Width of Top Groove       5/8         " "Side "       5/8	6 6
" "Side "	6.6

Approximate	weight,	each	18 ounces.
	" "	per 1000, packed	1250 pounds.
		Packed 200 in a barrel.	

### Double Petticoat.

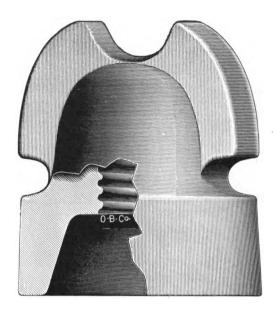


Cut Full Size.

THIS Insulator is made of brown porcelain and may be used with any pin having a standard size threaded end.

Working Voltage	4,000.
Test Voltage	30,000.
Diameter	$\dots 3\frac{3}{4}$ inches.
Height	3
Width of Top Groove	11/8 ''
Approximate weight, each	18 ounces.
" per 1000, packed	1250 pounds.
Packed 200 in a barrel.	-

CODE WORD. NO.



Cut 3/4 Actual Size.

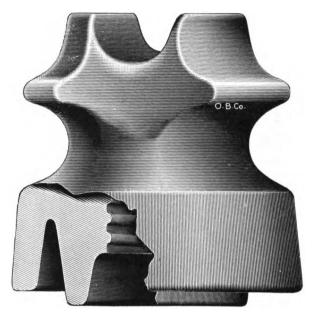
THE Insulator illustrated above is made of brown porcelain and may be used with any pin having a standard size threaded end.

Working Voltage Test Voltage Diameter	30,000. 33/8 inches.
Height Width of Top Groove	$\dots 3\frac{3}{2}$ "
Approximate weight, each	
CODE WORD NO	

Elatratus.

7635—Insulator......Per 1000, \$165 00

### Double Petticoat.



Cut 3/4 Actual Size.

THIS Insulator is made of brown porcelain and may be used with any of the Pins, listed in Section Six of this Catalogue, having a large threaded end.

Working Voltage	5,000.
Test Voltage	30,000.
Diameter.	
Height	.4 ''
Width of Top Groove	.1½ ''
Width of Top Groove Side "	.1¼ "

Approximate weight,	each	32 ounces.
"	per 1000, packed	2580 pounds.
	Packed 120 in a barre	el.

CODE WORD.	NO.	PER 1000.
Elatremus.	7636—Insulator	\$220 00

### Security Mine Feeder Wire Insulator.

#### Patented.



As its name implies, the Security Mine Feeder Wire Insulator is intended for supporting and insulating feeder wires in mines. It consists of three parts, viz.: semi-porcelain Insulator, malleable iron Pin and Locking Washer. One end of the Pin is pointed, fluted and barbed to make it easy to drive into the wall or roof of the mine, and to secure a firm anchorage in it when in place. The opposite end is formed to facilitate placing the Insulator on it easily and quickly and then securely holding it there. Grooves are provided through the Insulator to drain off any moisture which may accumulate and run down the Pin.

CODE WORD.	NO. PER 3207—Insulator complete for No. 4-0 B. & S. Feeder Wire	R 100.
Gammatam.	3208—Semi-Porcelain Insulator	5 50
Ganeariam.	3209 - Malleable Iron Pin	7 70
Ganniveram.	3210 " Washer	2 20

### Standard Mine Feeder Wire Insulator.





THE above cut shows a view of an insulating support for feeder wires in mines. The malleable iron Pin is threaded on one end to receive the Insulator, which is made of glass, and pointed and barbed on the other to fasten it in position by driving into the roof of the mine. The Glass Insulator is recessed on the end and the Pin is hollowed in the center, with an opening provided from the outside, for the purpose of preventing moisture from running down the latter from the roof of the mine and collecting on the feeder wire.

CODE WORD.	NO. P	ER 100.
Denotatam.	2622—Insulator complete for No. 4-0 B. & S. Feeder Wire	\$28 36
Caducam.	2096—Glass Insulator	11 02
Cajanam.	2097—Malleable Iron Pin	17 32

### Standard Machine Bolts.

### With Square Heads and Nuts.



On Standard Machine Bolts the length of thread is approximately three times the diameter. These Bolts can also be furnished to order with a longer thread than standard.

Code Word.	No.	Plain Finish.	Price per 100.	Code Word.	No.	Galvanized Finish.	Price per 100.
Elaudamus.	7637	1/4 x 1 in.	\$ 1 70	Electus.	7644	1/4 x 1 in.	\$ 1 82
Elautus.	7638	¼x 1¼"	1 70	Elegabimus.	7645	¼x 1¼"	1 85
Elavabamus.	7639	3/8 x 11/4"	2 40	Elegandus.	7646	3/8 x 11/4 "	2 76
Elavamus.	7640	3/8 x 1½"	2 40	Elegatus.	7647	3/8 x 1½"	2 78
Nequituram.	4357	3/8x 2 "	2 56	Niobeam.	4381	3/8 x 2 "	3 00
Nervinam.	4359	3/8 x 3 "	2 88	Nitefaciam.	4383	3/8 x 3 "	3 44
Nesciam.	4360	<sup>7</sup> / <sub>16</sub> x 2 "	3 00	Nitidabam.	4384	$\frac{7}{16}$ x 2 "	3 63
Elavaremus.	7641	½x 1½"	3 60	Elegemus.	7648	½x 1½"	4 37
Neveram.	4363	½x 2 "	3 86	Nivescam.	4387	½x 2 "	4 71
Niceram.	4364	½x 2½"	4 12	Nivescebam.	4388	½x 2½"	5 07
Nictabam.	4365	½x 3 "	4 38	Niviferam.	4389	½x 3 "	5 45
Nictaturam.	4366	½x 4 "	4 90	Nivosam.	4390	½x 4 "	6 19
Nidituram.	4368	½x 6 "	5 94	Nixatam.	4392	½x 6 "	7 64
Nidorabam.	4369	½x 8 "	6 98	Nixuriam.	4393	½x 8 "	9 12
Nidueram.	4370	½x10 "	8 02	Nixuriebam.	4394	½x10 "	10 58
Nigrandam.	4371	½x12 "	9 06	Noceam.	4395	½x12 "	12 00
Nigridiam.	4375	58 x 4 "	7 10	Noctiferam.	4399	%x 4 "	9 28
Niliacam.	4377	58x 6 "	8 62	Noctuam.	4401	5%x 6 "	11 42
Nimbiferam.	4378	58x 8 "	10 14	Nocturnam.	4402	5%x 8 "	13 52
Nimbosam.	4379	5% x10 "	11 66	Nodosam.	4403	%x10 "	15 68
Elavaturus.	7642	%x11 "	12 42	Elegiacus.	7649	5%x11 "	16 74
Nimiam.	4380	%x12 "	13 18	Nolebam.	4404	5% x12 "	17 86
Elavavimus.	7643	5%x14 ''	14 70	Elexeramus.	7650	%x14 ''	19 98

Standard sizes not listed above furnished promptly.

Can furnish with hexagonal nuts at 10 per cent net additional.

For Iron Washers see pages 310 and 311.



# Gimlet Point Lag Screws.



Code Word.	No.	Plain Finish.	Price per 100.	Code Word.	No.	Galvanized Finish.	Price per 100.
Adorsuram.	1241	5 x 2 in.	\$2 45	Nubifugam.	4414	<sup>5</sup> x 2 in.	<b>\$</b> 2 67
Adortam.	1242	5 x 3 "	2 85	Nubilandam.	4415	5 x 3 "	3 14
Eleximus.	7651	3% x 2 "	2 96	Elidimus.	7655	⅓ x 2 "	3 26
Eliadibus.	7652	3/8 x 2½"	3 22	Eligendus.	7656	3/8 x 2½"	3 57
Densabam.	2623	3/8 x 3 ""	3 48	Nubilatam.	4416	3/8 x 3 "	3 89
Densaturam.	2624	3/8 x 4 "	4 00	Nubilosam.	4417	3/8 x 4 "	4 50
Densaveram.	2625	7 x 3 "	4 11	Nuceam.	4418	7 <sub>6</sub> x 3 "	4 68
Densendam.	2626	7 x 4 "	4 75	Nucellam.	4419	7 x 4 "	5 45
Novissam.	4411	7 x 5 "	5 39	Nucinam.	4420	7 x 5 "	6 23
Eliciturus.	7653	½ x 2½"	4 47	Elimabamus.	7657	½ x 2½"	5 15
Noxiosam.	4412	½ x 3 "	4 83	Nucleatam.	4421	½ x 3 "	5 58
Elidebamus.	7654	½ x 3½"	5 19	Elimamus.	7658	½ x 3½"	6 03
Dentariam.	2627	½ x 4 "	5 55	Nudandam.	4422	½ x 4 "	6 47
Nubiferam.	4413	½ x 5 "	6 27	Nudatam.	4423	½ x 5 "	7 37
Adrademdam.	1243	½ x 6 "	6 99	Nugatoriam.	4424	½ x 6 "	8 28
Adrasam.	1244	½ x 7 "	7 71	Numerabam.	4425	½ x 7 "	9 19
Adrasuram.	1245	½ x 8 "	8 43	Numeriam.	4426	½ x 8 "	10 10

Standard sizes not listed above furnished promptly.

## Round Iron Washers.



Code Word.	No.	Finish.	Outside Diameter.	To Fit Bolt.	Price per 1000.
Elimaremus.	7659	Plain	¾ inch	¼ inch	<b>\$</b> 1 56
Elimaturus.	7660	Galv.	3/4 66	1/4 "	1 88
Nominabam.	2628	Plain	34 '' 7/8 ''	1/4 * 6 * 6 * 6 * 6 * 6 * 6 * 6 * 6 * 6 *	1 66
Nonacrinam.	4405	Galv.	7/8 **	50 11	2 06
Nonunciam.	2629	Plain	1 " "	1 8 3/8 ''	2 42
Noscam.	4406	Galv.	ī "	3/8 ''	3 08
Noscebam.	2630	Plain	1¼ "	7 66	3 20
Noscitabam.	4407	Galv.	11/4 "	16 "	4 22
Noscituram.	2631	Plain	13/8 "	1/8 "	4 60
Notescebam.	4408	Galv.	13/8 "	1/2 ''	6 20
Notoriam.	4409	Plain	134 "	5% "	8 96
Novellabam.	4410	Galv.	134 "	5% "	12 28

# Common Carriage Bolts.



The length of thread on Carriage Bolts is approximately three times the diameter.

Code Word.	No.	Plain Finish.	Price per 100.	Code Word.	No.	Galvanized Finish.	Price per 100.	
Nummariam.	4427	3∕8 x 4 in.	\$ 2 40	Nuspiam.	4439	3⁄8 x 4 in.	\$ 3 07	
Elimavimus.	7661	3/8 x 41/2"	2 56	Eliquandus.	7664	3/8x 41/2"	3 28	
Numnam.	4428	3/8 x 5 "	2 72	Nutricabam.	4440	3/8 x 5 "	3 49	
Nunciandam.	4429	3/8×6 "	3 04	Nutriciam.	4441	3/8×6 "	3 93	
Nunquam.	4433	½x 4 ''	3 66	Obaeratam.	4445	½ x 4 "	4 90	
Nuperam.	4434	½x 5 "	4 10	Obagitabam.	4446	½x 5 "	5 56	
Nuptabam.	4435	½x 6 "	4 54	Obarabam.	4447	½ x 6 "	6 19	
Nuptaturam.	4436	½x 8 "	5 42	Obaraturam.	4448	½x 8 "	7 42	
Eliminamus.	7662	½x 9 "	5 86	Eliquatus.	7665	½x 9 "	8 08	
Nuptaveram.	4437	½x10 "	6 30	Obaraveram.	4449	½x10 "	8 72	
Elingimus.	7663	½x11 "	6 74	Eliseramus.	7666	½x11 "	9 40	
Nupturam.	4438	½x12 "	7 18	Obardebam.	4450	½x12 "	10 06	

Standard sizes not listed above furnished promptly.

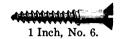
# Square Iron Washers.

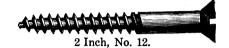


Code Word.	No.	Finish.	Size.	Thickness.	To Fit Bolt.	Price per 1000.
Elisurus.	7667	Plain	1½ inch sq.	½ inch	½ inch	\$ 8 50
Elixabimus.	7668	Galv.	1½ " "	1/8 "	1/2 "	13 10
Elixandus.	7669	Plain	2 ""	3 '' ī 6	1/2 "	15 40
Elixatus.	7670	Galv.	2 ""	3 '' 16	1/2 "	21 00
Elixemus.	7671	Plain	21/4 " "	3 '' 16	5/8 "	18 10
Ellopibus.	7672	Galv.	21/4 " "	3 '' i e	5/8 "	23 70

# Wood Screws.

Flat Head, Bright.







Cuts Full Size.

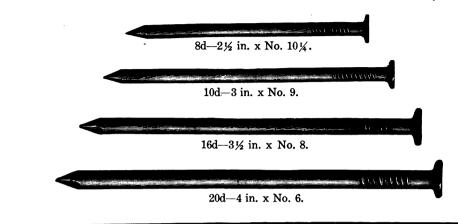
#### Price Per Gross.

	Ì Ì		Code Word	for Number.	
Code Word for Length.	Length in Inches.	Elocabamus.	Elocamus.	Elocaremus.	Elocuturus
ioi bengun	in menes.	No. 6.	No. 8.	No. 10.	No. 12.
Elugebimus.	1	\$ 0 87	\$ 0 98	\$ 1 15	\$ 1 25
Eluscamus.	11/4	98	1 10	1 20	1 40
Elutriamus.	11/2	1 05	• 1 20	1 30	1 55
Eluviebus.	13/4	1 25	1 40	1 50	1 70
Eluxerimus.	2	1 35	1 50	1 60	1 80
Emaceratus.	21/4	1 50	1 60	1 75	2 00
Emacuimus.	21/2	1 80	1 90	2 10	2 25
Emaculatus.	$\overline{2}\frac{3}{4}$	2 20	2 30	$\frac{1}{2} \frac{1}{40}$	2 55
Emanamus.	3	2 60	2 70	2 80	2 90

	1		Code Word	l for Number.	
Code Word for Length.	Length in Inches.	Elogiamus.	Elotus.	Elucebamus.	Elucendus.
20. 20.,	in menesi	No. 14.	No. 16.	No. 18.	No. 20.
Elugebimus.	1	\$ 1 60	\$ 2 10	\$ 2 65	\$ 3 15
Eluscamus. Elutriamus.	1 ¼ 1 ½ 1 ¾	1 75 1 90	2 30 2 45	2 80 3 15	3 35 3 50
Eluviebus. Eluxerimus.	134	2 05 2 35	$\begin{array}{ccc} 2 & 65 \\ 2 & 95 \end{array}$	3 40 3 85	4 00 4 40
Emaceratus.	21/4	2 45	3 25	4 10	4 85
Emacuimus. Emaculatus.	2½ 2¾	2 60 2 85	3 40 3 <b>6</b> 5	4 35 4 75	5 20 5 70
Emanamus.	3	3 15	3 85	5 10	6 15

Put up in packages of 1 gross each.

#### Steel Wire Nails.



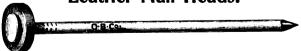
40d-5 in. x No. 4.

#### Cuts Full Size.

THE smaller sizes of these Nails are suitable for use with insulating knobs or porcelain cleats, while the larger sizes, such as the 40d, may often be used to advantage with wood side brackets.

Code Word.	No.	Size.	Approximate Number to the Pound.	Price per 100 lbs.
Emanaremus.	7673	8d	106	\$ 5 76
Emaneamus.	7674	10d	69	5 64
Emanebimus.	7675	16d	49	5 64
Emanendus.	7676	20d	31	5 54
Emansibus.	7677	<b>40</b> d	18	5 54

#### Leather Nail Heads.



BY using these Heads with Steel Wire Nails, the latter may be used to fasten insulating knobs, porcelain cleats, etc. in place. The Nail Heads may be used with 10d and smaller sizes of Steel Wire Nails.

CODE WORD. NO.

## Wood Cross Arm Supports.

#### For Iron Poles.

THE Single and Double Supports illustrated below, are for the purpose of suspending one or two standard size wood cross arms respectively from iron poles. The cross arms are secured to the Supports by the two ½ inch bolts shown, which pass through them and clamp them in place by means of a nut and washer on their outer ends. These Supports are made of malleable iron.



Single.

CODE WORD.	NO.												EAG	CH.
Depasturam.	2641-	Single	Support	for	4	in.	Pole	(4½	in.	outside	diamete	r) §	\$ 1	10
Depaveram.	2642-	. "	"	"	4 1/2	"	"	(5	"	"	"	)	1	34
Dependeram.	2643	. "	"	"	5	"	"	$(5_{16}^{9}$	"	"	"	)	1	11
Deperdam.	2644	. "	"	"	6	"	"	(65%	"	"	44	)	1	38



#### Double.

CODE WORD.	NO.												EAC	H.
Deperdebam.	<b>2645</b> —	Double	Support	for	• 4	in.	Pole	(4½	in.	outside	diamete	r) §	1	38
Deperditam.	2646	"	"	"	4 1/2	"	"	(5	"	"	"	)	1	<b>56</b>
Depexuram.	2647	"	"	"	5	"	"	$(5_{16}^{9}$	"	"	"	)	1	36
Depicturam.	2648		"	"	6	"		(65%	"	"	"	)	1	64

Prices include Bolts but not Wood Cross Arms.

In ordering Cross Arm Supports observe that the pole diameters as listed are "pipe measurements."



#### Standard Cross Arms.



 $3\frac{1}{4} \times 4\frac{1}{4}$  Inches,  $1\frac{1}{2}$  Inch Holes.

Bored regularly for two ½ inch lag screws, and painted with two coats.

CODE WORD.	NO.							EACH.
Adopertam.	1235 - 3	feet	long,	Holes	for	2	Pins	\$ 0 15
Adoptatam.	1237-4						66	
Adorabam.								
Obarescam.	44516	66	"	66	"	4	"	30
Obarmatam.	4452-6	"	66	"	"	6	"	30

Cross Arms of special dimensions or borings furnished to order.

### Cross Arm Braces.



THE sizes listed below are regularly furnished with a hole at each end 16 inch and 16 inch in diameter, respectively. They can be supplied with special sizes of holes to order.

CODE WORD.	NO.								PER 1000.
Ematuremus.	7679—Le	ength	20	inches,	1 x	3	inch	Iron.	, Plain\$ 58 50
Adoraveram.	1239—	"	20	"		3	"	"	Japanned 65 40
Denubendam.	2632	"	20	"	1 x		"	"	Galvanized 82 00
Embolimus.	7680	"	24	"	11/x		"	"	Plain 96 00
Adoriendam.	1240—	"	24	"	1 1/4 x	1/4	"	"	Japanned 105 80
Denudabam.	2633	"	24	"	1 1/2 x	1/4	"	4.6	Galvanized 132 20
Embolus.	7681—	"	26	"	1½x	1/4	"	"	Plain 103 80
Deonerabam.	2634	"	26	4.6	11/4 x	1/4	"	"	Japanned 115 00
Deoptabam.	2635	"	26	"	1 1/4 x		"	"	Galvanized 142 80
Emensurus.	7682	"	28	"	1 1/x	1/4	"	"	Plain 111 80
Obarseram.	4453	"	28	"	1 4 x	1/2	"	"	Japanned 124 00
Obaudiam.	4454—	"	28	"	1¼x		"		Galvanized 151 80

## Pole Steps.



CODE WORD.	NO.	PER 1000.
Adrisonam. Adrorandam.	1246 $-\frac{1}{16}$ x 9 inches, Plain	\$ 46 00 66 70

#### Wood Pin.

#### Threaded End, Standard.



CODE WORD. NO.

 Adrotatam.
 1248—1½ x 9 inch, Split Oak, Painted
 Per 1000, \$ 16 00

 Adruam.
 1249—1½ x 9 " Locust,
 " " 25 00

 Depascam.
 2639—1½ x 8 " " " " 24 00

Special sizes and styles of Pins made to specifications.

See Section Six for High Tension Insulator Pins.

### Corner Pin.

Threaded End, Standard.



CODE WORD. NO.

Adrumabam.  $1251-1\frac{1}{2} \times 9$  inch, Split Oak, with Bolt and Washer...Each, \$ 0 08 Obbibebam.  $4458-1\frac{1}{2} \times 9$  "Locust, """ " .... " 09

#### Wood Pin.

For Transposition Insulators.

Threaded End, Standard.



THE threaded end of this Pin is longer than that of the standard pins listed above, being made 4 inches long, to adapt it for use with the Transposition Insulator, Cat. No. 2616, illustrated on page 296, for which purpose it is especially recommended.

CODE WORD. NO.

# Forged Steel Pin. With Small Wood Top. Threaded End. Standard.



THIS Pin has a threaded and paraffined hardwood thimble on the top to fit the standard sizes of glass and porcelain insulators. It is provided with a shoulder at the top, and a nut and washer at the bottom of the shank, to attach it rigidly to wooden cross arms of the regular thickness.

CODE WORD. No.

Obaudiebam. 4455—Pin 9½ inches long, Shank ½ inch in diameter,

Wood Top 2½ inches high......Per 1000, \$ 86 40

#### Steel Pin.

For Iron Cross Arms and Fittings.
Threaded End, Standard.



No. 7684.

THIS Pin is recommended for use on low voltage lines where iron cross arms and fittings are employed. The Pin is fitted with a ½ x 5½ inch bolt, and furnished in the several styles listed below. The wood top is 2¾ inches in length, and the base is 2¼ inches. In the No. 7686 Pin, the length of the wood top is 4½ inches.

CODE WORD.	NO.								
Emeramus.	7684Pin	with	Wood	Top	and	Galv. Iron	Base	 . Each,	\$ 0 15
Emerendus.	7685 ''	4.6	"	"	"	Porcelain	"	 . "'	16
Emergimus.									15

## Wood Side Bracket.

Threaded End, Standard.



#### Malleable Iron Pin.



CODE WORD. Adruebam.

NO.

1250-1½ inch...

.....Per 100, \$ 24 50

## Drop Forged Iron Pin.



HE length of the standard Pin is 71/4 inches; 3 inches on the plain end beneath the shoulder, and 41/4 inches on the threaded part above it. Other sizes furnished to specifications.

CODE WORD.

Cillam. Depascebam.

2112-1½ inch Pin, with 2640—1½ " without " " " .... "

End Bolt and Washer....Per 100, \$ 61 20

7 HERE a single feeder wire is to be attached to the top of wood poles, the Ridge Iron illus-

trated herewith will be found particularly suitable. It may also be used in three wire construction by supporting two of the wires on a cross arm, and the third on the top of the pole. The Pin is furnished in the several styles listed below, and is fitted with a  $\frac{7}{16}$  x 5½ inch bolt. The Ridge Iron is attached to the top of the pole by means of four lag screws or

# Galvanized Ridge Iron. With Steel Pin.



CODE WORD. Scalptam. Scatendam.

Scatitam.

NO.

spikes.

5732—Ridge Iron with Pin, Wood Top and Galv. Iron Base. Each. \$ 0 51 " " Porcelain " .. 5733---52 5734--All Wood Top ..... 51



#### Iron Side Brackets.



THIS Bracket is intended for telephone or light feeder wires. It is made of malleable iron.

CODE WORD.

NO.

Emersibus.

7688—Side Bracket.....

Each. \$ 0 18



No. 1253.



No. 1254.



No. 5735.

THE Nos. 1253 and 1254 Brackets illustrated above are made of malleable iron and intended to carry the largest sizes of feeder wires, the Curved Back style being designed especially for pole use. The Extra Heavy Bracket, No. 5735, is made of grey iron.

CODE WORD.	NO.		
Adulabam.	1253—Curved Back	Each,	\$ 0 31
Adula veram.	1254—Straight "	"	30
Scatueram.	5735—Extra Heavy	"	82

# Duplex Iron Side Bracket.



THIS Bracket is made of malleable iron and allows a vertical separation between the two wires of approximately 10 inches. It is designed for telephone and light feeder wires.

## Pipe Bracket Pin.



THIS is a standard size Iron Pin with split collar, adapted to attach to pole brackets for carrying feeder wires. Made of malleable iron.

CODE WORD. NO.

Adunandam. 1255—Pin for 1½ in. Pipe (133 in. outside diameter)....Each, \$ 0 37

Adunatam. 1256— " 1½ " " (133 " " " ).... " 40

Adunaturam. 1257— " 2 " " (2¾ " " ).... " 42

# Feed In Insulator. For Pole Brackets.



POR use on pole bracket construction to support and insulate the tap wire running from the feeder to the trolley wire. The insulation is opalescent glass with an opening 1 inch in diameter.

CODE WORD.	NO.												
Obdituram.	4461—I	nsulato	r for	11/4	in.	pipe	$(1\frac{43}{64})$	in.	outside	diamete	r) I	Each,	\$ 0 72
Obdormiam.	4462—	"	"	1½	"	"	$(1\frac{29}{32})$	"	"	44	)	"	75
Obducendam.	4463	"	"	2	"	"	$(2\frac{3}{8})$	"	"	"	)	"	77

# Ornamental Pole Top.

Cast Iron.



CODE WORD.	NO.										
Obductabam.	4464—Top	for	4	in.	Pole	$(4\frac{1}{2})$	in.	outside	diameter	) Each,	\$ 0 92
Obducturam.	4465 "	"	41/2	"	"	(5	"	"	"	) "	1 12
Obdulcabam.	4466 "	"	5	"	"	$(5_{16}^{9})$	4 6	66	"	) "	1 32
Obdurabam.	4467 ''	"	6	"	"	(65%	"	44 .	"	) "	1 56

Special designs to order.

In ordering Pole Tops observe that the pole diameters as listed are "pipe measurements."



# Insulated Pole Top. Cast Iron.



CODE WORD.	NO.					
Depilatam.	2650—Top	for 4	inch	Pole	 Each.	\$ 2 76
Depingam.	2651—"	" 4	1/2 "	"	 . "	2 76
Depingebam.	2652—"	" 5 <sup>°</sup>	- "	66	 4.6	2 76
Deplanabam.	2653 ''	" 6	66	66	 "	2 80

Complete with Feeder Wire Insulator Pin, ½ x 10 inch Eyebolt and Wood Plug.

Pole Tops furnished without Feeder Wire Insulator Pin to order.

In ordering Pole Tops specify actual inside diameter of poles with which they are to be used.

# Feeder Arm. Malleable Iron.



One	PIN.

CODE WORD.	NO.												
Deplangam.	2654-	Arm	for	4	in.	Pole	(41/2	in.	outside	diameter)	Each,	\$ 2	16
Deplorabam.	2655-			4 1/2	"	"	(5	"	"	"	) " "	2	24
Depoliam.	2656-	"	66	5	"	"	(5₽	"	"	"	)	2	42
Depoliebam.	2657	"	"	6	"	"	(6%	"	66	44	) "		$\overline{64}$

In ordering Feeder Arms observe that the pole diameters as listed are "pipe measurements."

Special sizes and styles of Feeder Arms made to specifications.



# Feeder Arms. Malleable Iron.



Two Pin.

CODE WORD.	NO.											
Deponam.	2658—	Arm	for	4	in.	Pole	(41/2	in.	outside	diamete	r) Each,	\$ 2 76
Deponebam.	2659-	. "	"	41/2	"	"	(5	"	"	"	) "	2 86
Deportabam.	2660-	. "	"	5	"	"	(5.9)	"	"	"	) "	3 08
Deposueram.	2661-	. "	"	6	"	"	(65%	66	44	"	j "	3 48



Four Pin.

CODE WORD.	NO.											
Depravatam.	2662-	Arm	for	4	in.	Pole	$(4\frac{1}{2})$	in.	outside	diamete	r) Each	\$ 3 54
Deprimam.	2663—	"	66	41/2	"	. "	(5	"	"	"	) "	3 70
Depromptam.	2664	"	"	5	"	"	$(5_{16}^{9})$	"	"	"	) "	3 70
Depsebam.	2665	"	"	6	"	"	(65%	"	"	66	) "	4 40



Six Pin.

CODE WORD.	NO.														
Depsturam.	2666—A	lrm	for	4	in.	Pole	$(4\frac{1}{2})$	in.	outside	diameter	.)	Each,	\$ 5	06	
Depudes cam.	<b>2667</b> —	"	"	41/2	"	"	(5	"	"	"	)	"	5	22	
Depugnatam.	2668—	"	"	5	"	66	$(5_{16}^{9}$	"	"	"	)	44	5	40	
Depuleram.	2669—	"	"	6	"	46	(65%	"	"	"	)	44	5	74	

In ordering Feeder Arms observe that the pole diameters as listed are "pipe measurements."

Special sizes and styles of Feeder Arms made to specifications.



# Iron Pole Collars.



#### One Piece, Single Bolt.

CODE WORD.												EACH.
Obdurescam.	4468—C	ollar	for	4	in.	Pole	$(4\frac{1}{2})$	in.	outside	diameter	) <b></b> .	<b>\$</b> 0 29
Obduxeram.	4469	"	"	4½	"	"	(5	"	66	66	)	30
Obe de bam.	4470—	"	"	5	"	"	$(5_{16}^9$	"	"	44	)	30
Obediam.	4471	"	"	6	66	66	(65%	"	"	66	)	33



#### One Piece, Two Bolts.

CODE WORD.  Depulpabam.	NO. 2670—Col	lar f	or 4	in.	Pole	(4½ i	n. outside	diameter	)	<b>EACH.</b> \$ 0 33
Depulsam.	2671		" 4½	"	44	(5 . 4	"	"	)	34
Depulsatam.	2672		" <b>5</b>	"	"	(5 <sub>16</sub>	"	46	)	35
Depurgatam.	2673		" 6	"	"	(65% 4	"	"	)	37



#### Split, Two Bolts.

CODE WORD.	NO.											EAG	CH.
Obediveram.	4472—C	ollar	for	4	in.	Pole	$(4\frac{1}{2})$	in.	outside	diameter	)	<b>\$</b> 0	32
Oberrandam.	4473	"	66	$4\frac{1}{2}$	"	"	(5	"	"	66	)		33
Oberratam.	4474	"	"	5	"	"	$(5_{16}^{9}$	"	"	"	)		34
Obesabam.	4475	"	"	6	"	"	(6%	"	66.	66	)		<b>3</b> 5

In ordering Pole Collars observe that the pole diameters as listed are "pipe measurements."



#### Iron Pole Collars.



Split, Three Bolts.

CODE WORD.  Deputandam.		ollar	for	4	in.	Pole	(4½	in.	outside	diameter		EACH. 8 0 35
Deputatam.	2675	4.6	"	41/2	"	"	(5	"	• "	"	)	37
Depuviam.	2676-	"	"	5	"	"	$(5_{16}^{.9}$	"	"	"	) <i>.</i>	37
Deradam.	2677	"	"	6	"	"	(65%	"	"	"	)	39



Split, with Insulator Spool.

PROVISION is made in the two forms of Pole Collars included in the price list below, for the insulation of the span or guy wires which may be attached to them, by the use of the Dirigo Insulator Spool No. 4201 which is fastened into the Collar by means of the outer clamping bolt, as the above illustration of the Split Collar will show. In other respects these Collars are similar to the respective styles displayed on the middle of the opposite, and the top of this page.

CODE WORD.	NO.											EACH.
Obe saturam.	4476—One F	iece Col	lar fo	r 4	in.	Pole	$(4\frac{1}{2})$	in. (	outside	diameter	)	\$ 0 56
Obesaveram.	4477 - "			, –					66	"	)	57
Obesuram.	4478—"									"	)	59
Obfueram.	4479—"	"	"	6	"	"	(65%	"	"	"	)	60
Obiraturam.	4480—Split	•		4	"	"	$(4\frac{1}{2})$	"	"	66	)	58
Obiveram.	4481 "		"	-/-					66	"	)	60
Objace bam.	4482—"		"						"	"	)	61
Objacueram.	4483—"	4	"	6	"	"	(65%	"	"	44	)	62

In ordering Pole Collars observe that the pole diameters as listed are "pipe measurements."



#### Noark Fuses and Cut=Outs.



THE Noark Fuses, listed on the following pages, are of the enclosed type and represent the highest development in protective devices for electric railway and power and mining circuits. The construction of these Fuses is such that there is absolutely no arcing even under conditions of a dead short circuit; hence no danger of the Fuse setting fire to any of the surroundings or injuring the fittings to which it is connected. The fuse strip, which is enclosed in an outer tube, is made of a special grade of metal peculiarly adapted to the purpose, and is surrounded by a powder which protects it from currents of air and other disturbing influences. This powder, after the fuse is blown, immediately takes up the gases generated by the fusing of the metal, thus making the Fuse absolutely safe under all conditions. As the Fuse is unaffected by outside influences, great accuracy in fusing point is obtained, both in current and time values.

Noark Fuses have a definite and accurate time interval of operation, ranging from minutes on small overloads to the infinitesimal part of a second on heavy overloads, and operating instantaneously on short Owing to this time interval overload operation, Noark Fuses of smaller current capacity than the open fuses usually employed on motor equipments can be used with less frequent blowing and better protection to the apparatus. The fact that these Fuses will not blow under conditions of an instantaneous overload, as would fuses of the ordinary open wire type, results in the Noark Fuses being much more economical to use. While these Fuses are equally suitable for either lighting or motor circuits, they are peculiarly adapted to the latter on account of the manner in which they operate under varying current When used on motor circuits, they not only afford absolute protection to the motor as well as the balance of the circuit, but, being designed for a definite time value, they will not blow except under conditions where it is necessary to open the circuit. These Fuses, after being ruptured, can be refilled indefinitely if the tubes are in good condition. If these tubes are returned to us, charges prepaid, they will be refilled at a very nominal expense.

It will be noted that these Fuses are furnished with several different forms of contacts, and in ordering either Fuses or Cut-Outs, it is necessary that the style of contact desired be specified in order to pre-

vent mistakes in filling the order.

### Noark Fuses.

#### For 250 Volt Circuits.

Will fit only 250 Volt, 1-8 Amperes Cut-Outs, Nos. 7749 and 7750.

CODE WORD.       NO.         Emicenus.       7689       1 Amperes, Type B Contacts       Each, \$ 0         Emigrandus.       7690       2 " " B " " "         Emigratus.       7691       3 " " B " "       " "         Emigremus.       7692       4 " " B " " "       " "         Eminaturus.       7693       5 " " B " "       " "         Eminebamus.       7694       6 " " B " "       " "         Eminemus.       7695       8 " " B " "       " "	13 13 13 13 13 13
Will fit only 250 Volt, 10-15 Amperes Cut-Outs, Nos. 7751 and 7752	<u>.</u>
Emineremus.       7696— 10 Amperes, Type B Contacts.       Each, \$ 0         Emisimus.       7697— 12 " B " " "         Emittendus.       7698— 15 " B " " "	14 14 14
Will fit only 250 Volt, 20-30 Amperes Cut-Outs, Nos. 7753 and 7754	
Emollitus.       7699— 20 Amperes, Type B Contacts.       Each, \$ 0         Emphasibus.       7700— 25 " " B " " "         Emporius.       7701— 30 " " B " " "	17 17 17
Will fit only 250 Volt, 35-50 Amperes Cut-Outs, Nos. 7755 and 7756	i.
Emptitamus.       7702—35 Amperes, Type B Contacts       Each, \$ 0         Emptitius.       7703—40 " " B " " "         Empturus.       7704—45 " " B " " "         Emptus.       7705—50 " " B " "	19 19 19 19
Will fit only 250 Volt, 60-100 Amperes Cut-Outs, Nos. 7757 and 7758	<b>.</b>
Enugivimus.       7706— 60 Amperes, Type C Contacts.       Each, \$ 0         Emulsurus.       7707— 70 " " C " "       " C " "         Emuncturus.       7708— 80 " " C " "       " "         Emundamus.       7709— 90 " " C " "       " "         Emuniendus.       7710—100 " " C " "       " "	38 38 38 38 38
Will fit only 250 Volt, 125-150 Amperes Cut-Out, No. 7759.	
Emunitus. 7711—125 Amperes, Type D Contacts	47 47
Will fit only 250 Volt, 175-225 Amperes Cut-Out, No. 7760.	
Emuscatus.       7713—175 Amperes, Type D Contacts       Each, \$ 0         Emuscemus.       7714—200       " D " " "         Emutandus.       7715—225       " D " " "	68 68 68
Will fit only 250 Volt, 250-400 Amperes Cut-Out, No. 7761.	
Emutemus. 7717—300 " " D "	50 50 50 50
Will fit only 250 Volt, 500-600 Amperes Cut-Out, No. 7762.	
Enarrandus. 7721—600 " " " " 2	90 90
In ordering Fuses specify the style of Contact desired, or that	

In ordering Fuses specify the style of Contact desired, or that of the Cut-Outs with which they are to be used.

## Noark Fuses.

#### For 500 Volt Circuits.

Will fit only 500 Volt 1-10 Amperes Cut-Out, No. 7763.

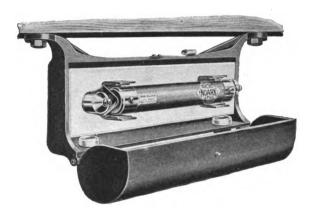
CODE WORD.	NO.												
Enarratus. Enaveramus. Enavigatus. Enavigemus. Enavimus. Enavimus.	7722— 7723— 7724— 7725— 7726— 7727—	1 An 2 3 4 5 6	" " "	66 66 66	B B B B B B B	Contacts					. Each,	\$ 0	16 16 16 16 16
Enervamus.	7728-	8	"	"	В	46					. "		16
Enicabamus.	7729—	10	"	"	В	"	• • • • •	• • • •	• • • • •	• • • • •	. "		16
Will	fit onl	y 500	Volt	12-2	5 A	mperes	Cut	-Ou	t, N	To. 7	764.		
Enicamus.			nperes,	Туре		Contacts			. <b></b> .	<b>.</b> .	.Each,	\$ 0	
Enicaremus.	7731—		"	"	В	"	• • • • •	• • • •			. ".		18
Enicaturus.	7732—		"	"	В	"	· · · · ·	• • • •	• • • •	• • • • •			18
Enicavimus.	7733—		"	"	B	66	• • • • •	• • • •	• • • • •				18
Eniteamus.	7734—	20		• • •	В	•••	• • • • •		••••	• • • • •	•	-	18
Will	fit onl	y 500	Volt	30–50	) A	mperes	s Cut	-Ou	t, N	To. 7	765.		
Enitendus.	7735—	30 An	nperes,	Туре	A	Contacts	3				.Each,	\$ 0	27
Enituimus.	7736		**	"	Ą	"							27
Enixibus.	7737		"	"	À	"		• • • •			"		27
Enixurus.	7738—		"	"	Ą	"	• • • • •	• • • •		• • • • •	. ".		27
Enneadibus.	7739—	50	••	••	A	••	• • • • •	• • • •	• • • • •	• • • • •	•		27
Will	fit onl					Amper				No.	7766,		
		and	Noarl	c Cai	. C	ut-Out,	No.	777	0.				
Enodabimus.	7740-	60 Ar	nperes,	, Туре	Ç	Contacts	3	<b></b>			.Each,	\$ 0	43
Enodandus.	7741—		"	"	Č	66	• • • • •	• • • • •	· · · · ·	• • • •	. "		43
Enodatus. Enodemus.	7742 7743		66	"	č	66	• • • • •	• • • •		• • • •			43 43
Enoaemus.	1145-	100			C			• • • •	• • • • •	• • • • •	•		40
Will	fit onl	•				Amper			,	No.	7767,		
		and	Noark	c Car	· C	ut-Out,	No.	777	1.				
Enormibus. Ensibus.	7744— 7745—	125 Ar 150	nperes,	, Туре	D D	Contacts	3 		<b>.</b>	• • • • •	.Each,	\$ 0	63 63
Will	fit onl	y 500	Volt	175-	225	5 Ampe	res C	ut-0	Out.	No.	7768.		
		-				ut-Out,					-,		
Enubilamus. Enucleamus. Enumeratus.	7746— 7747— 7748—	200	nperes,	, Type	C C C	Contacts	3 		• • • • • • • • • • • • • • • • • • •		Each,	\$ 1	75 75 75

In ordering Fuses specify the style of Contact desired, or that of the Cut-Outs with which they are to be used.

See page 326 for description.

### Noark Car Cut=Out.

#### For 500 Volt Circuits.



Noark Car Cut-Out with Type C Contacts.

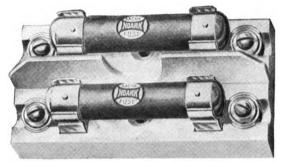
THE Noark Car Cut-Out illustrated above consists of a 500 volt Cut-Out mounted on a slate base and protected from injury, moisture, etc., by a japanned cast iron box. The latter is provided with a hinged cover and spring snap catch, so that the interior is readily accessible for inspecting or replacing the fuse, when necessary. The styles of contact supplied with these Cut-Outs are illustrated on the opposite page. Fuses are not included with Car Cut-Outs unless so ordered.

CODE WORD.	NO.							EA	CH.	
Equiremus.	7770— 60 to 100 A	mperes,	Туре	C,	Slate	Base	·	\$ 2	2 60	)
Equitamus.	7771—125 " 150	"	"	D,	"	"		8	3 00	)
Eradendus.	7772—175 " 225	"	"	C,	46	"	·	ŧ	5 40	0

In ordering Car Cut-Outs specify the style of Contact desired.



# Noark Cut-Outs. For 250 Volt Circuits.



250 Volt, Double Pole, Noark Cut-Out with Type B Contacts.



Type B.



Type (



Type D.

THE several styles of Contact with which these Cut-Outs are supplied, are illustrated above. Fuses are not included with Cut-Outs unless so ordered.

#### For use on Circuits up to and including 250 Volts.

CODE WORD.	NO.							EACH.
Enunciamus.	7749— 1 to 8	Amperes,	Туре	èВ,	Single !	Pole,	Slate Base	\$ 0 36
Enupsimus.	7750— 1 " 8	3 "	"	В,	Double	"	Porcelain Base	50
Epasturus.	7751— 10 " 18	5 "	46	В,	Single	"	Slate Base	38
Ephebicus.	7752 10 " 18	; "	"	В,	Double	"	Porcelain Base	70
Epidaurius.	7753 20 " 30	, "	"	В,	Single	"	Slate Base	46
Epidixibus.	7754 20 " 30	"	"	B,	Double	"	Porcelain Base	85
Epileus.	7755 35 " 50	, ,,	"	В,	Single	"	Slate Base	62
Epirotibus.	7756— 35 " 50	"	"	В,	Double	"	Porcelain Base	1 15
Epitomamus.	7757 60 "100	) "	"	C,	Single	"	Slate Base	85
Epitomibus.	7758— 60 "100	) "	"	C,	Double	66	Porcelain Base	1 85
Epotabimus.	7759—125 "150	) "	"	D,	Single	"	Slate Base	2 00
Epotandus.	7760-175 "225	; "	"	D,	"	"	" " …	2 35
Epotatus.	7761-250 "400	) "	"	D,	"	"	" "	4 10
Epularibus.	7762-500 "600	) "	"	D,	"	"	" "	6 20

In ordering Cut-Outs specify the style of Contact desired.

See page 326 for description.



# Noark Cut-Outs. For 500 Volt Circuits.



500 Volt, Noark Cut-Out with Type A Contacts.











Type A.

Type B

Type C.

Type D

THE several styles of Contact with which these Cut-Outs are supplied, are illustrated above. Fuses are not included with Cut-Outs unless so ordered.

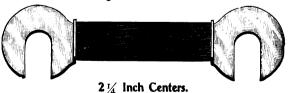
#### For use on Circuits of 300-500 Volts.

CODE WORD.	NO.									E	ACH.	
Epulaturus.	7763— 1 to	10	Amperes,	Type	В,	Single	Pole,	Porcelain	Base.	. \$	0 47	
Epulonibus.	7764— 12 "	25	-66	7.5	Β,	"	"	"	66		52	
Equarius.	7765 30 "	50	"	"	A,	"	"	66	"		68	
Equiebamus.	7766— 60 "	100	"	"	C.	"	66	Slate	"		1 15	,
Equilibus.	7767—125 ''	150	"	"	Ď.	66	66	"	"		1 40	,
Equinus.	7768-175 "	225	"	"	C,	. "	"	66	" .		2 15	,

In ordering Cut-Outs specify the style of Contact desired.

See page 326 for description.

# Railway Motor Fuses.

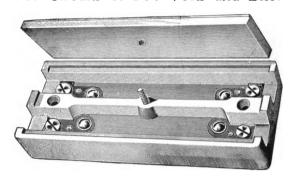


CODE WORD.
Ancillulam.
Distraham.
Eradicamus.

NO.											Pı	ER	10	00.
1513—100	Ampere	3	 	 	 	 	 	 . <b>.</b> .	 	 	 	\$	3	50
2861 - 150	24													20
7769—200	"		 	 	 	 	 	 	 	 			8	00

Standard packages contain 100 Fuses.

# Porcelain Cut=Out. For Circuits of 500 Volts and Less.



#### Length of Break, 3 Inches.

CODE WORD.

Ditescam.

NO. 2866—10 Amperes, Double Pole....

Each, \$ 0 40

# Fuse Strips.

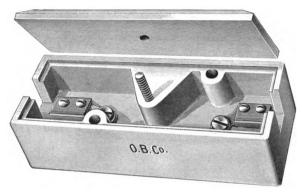


Furnished in 10 inch lengths unless otherwise ordered.

Code Word.	No.	Safe Carrying Capacity,		r Use, and Fusing Such Lengths.	Weight	Price
Code Word.	140.	Amperes.	Inches.	Amperes.	per Foot, Ounces.	per Pound.
Anclabam.	1514	100	4	129	3	\$ 0 65
Anclaturam.	1515	125	4 1/4	158	37/8	60
Ancorariam.	1516	150	$\frac{4\frac{1}{4}}{4\frac{1}{2}}$	187	47/8	60
Ancturam.	1517	175	41/2	215	6	60
Aneticam.	1518	200	434	243	67/8	60
Angariabam.	1519	225	4 3/4	270	77/8	60
Angenbam.	1520	250	4 34	298	87/8	60
Angituram.	1521	275	4 3/4	325	934	60
Angulabam.	1522	300	5	351	1034	60
Angustabam.	1523	350	51/4	402	12 ¾	60
Angustiam.	1524	400	5 ¼	450	145%	60
Anhelabam.	1525	450	$5\frac{1}{2}$	500	17	60
Anicillam.	1526	500	6	550	201/2	60

Standard packages contain 10 pounds

# Porcelain Cut-Out. For Circuits of 500 Volts and Less.



Length of Break, 3 1/4 Inches.

CODE WORD. Aperiam.

NO. 

## Fuse Wire.



Code Word.	No.	Safe Carrying Capacity,  Best Lengths for Use, Current for Such Le			Number of Feet	Price per Pound.	
Couc Words		Amperes.			per Pound.		
Animabam.	1527	1	11/4	3	1025	\$ 1 10	
Animaveram.	1528	2	1½	5	680	1 05	
Annariam.	1529	3	1½	7	445	1 00	
Annatabam.	1530	5	13/4	10	168	1 00	
Annexam.	1531	7	2	13	122	85	
Annianam.	1532	10	21/4	17	82	80	
Annictatam.	1533	15	24	24	53	75	
Commovimus.	6920	20	$2\frac{1}{2}$	30	371/3	75	
Anniculam.	1534	25	$2\frac{3}{4}$	37	281/3	75	
Comoedicus.	6921	30	23/4	43	232/3	75	
Distribuam.	2862	50	$\bar{3}^{\prime}$	69	13,7	75	
Distringam.	2863	75	31/2	99	710	70	
Distruncam.	2864	100	4	129	512	70	

Standard packages of 1 to 50 Amperes contain 1 pound; over 50 Amperes 5 pounds.

# Porcelain Cut=Outs. For Circuits of 250 Volts and Less.





No. 7773.

No. 7777.

CODE WORD.	NO.							
Eraseramus.	7773—15	Amperes,	Double	Pole,	Main,	Covered	 .Each,	\$ 0 24
Erasimus.	7774-25		"	44	"	"	 . "	38
Erecturus.	777550	"	44	"	"	"	 . "	80
Erependus.	7776—15	"	"	66	Branch	h, "	 . "	24
Ereptamus.	7777 - 25	4.6	"	"	66	"	 . "	38

# Porcelain Wiring Tubes.



These Tubes are intended for insulating wires where they pass through walls or floors.

Code Word.	No.	Length Under Head.	Size of Hole.	Outside Diameter.	Price per 100
Erexeramus.	7778	3 inch	3/8 inch	¾ inch	\$ 1 82
Treximus.	7779	4 "	3/8 "	3/4 "	1 97
Ericemus.	7780	4 "	1/2 "	1 "	2 80
Erigebamus.	7781	6 "	3/8 "	3/4 "	4 68
Trigimus.	7782	6 "	1/2 "	1 "	5 44
Erithacus.	7783	8 "	3/8 "	3/4 ''	8 40
Erivabimus.	7784	8 "	1/2 "	1 " "	9 60
Trivandus.	7785	8 "	34 "	1½ "	12 00
Trivatus.	7786	12 ''	1/2 "	1 1 "	16 80
rivemus.	7787	12 ''	34 "	1½ "	21 60

# Porcelain Fuse Rosette.



No. 4808.

CODE WORD.	NO.								
Panxeram.	4808—R	osette	for	Cleat	Worl	k	 Each,	<b>\$</b> 0	26
Pappabam.	4809	"	"	Concealed	"		 "		26

# Porcelain Fuseless Rosette. 250 Volt.



No. 4807.

CODE WORD.	NO.
Pannuchiam.	4807—Rosette for Cleat Work

### Porcelain Cleats.



Cut 1/2 Actual Size.

Length, 2 inches. Height, 1½ inches. Width, ¾ inch. Hole, ¼ to ¾ inch.

Will take Insulated Wires No. 14 to No. 8 B. & S. Gauge. Standard package contains 250 Cleats.

CODE WORD. NO.



Cut 1/2 Actual Size.

Length, 2¼ inches. Height, 1¼ inches. Width, 1 inch.

Hole,  $\frac{3}{16}$  to  $\frac{1}{2}$  inch.

Will take Insulated Wires No. 6 to No. 2 B. & S. Gauge. Standard package contains 250 Cleats.

CODE WORD. NO.

#### Porcelain Cleats.



Cut 1/2 Actual Size.

Length, 2½ inches. Height, 13/8 inches.

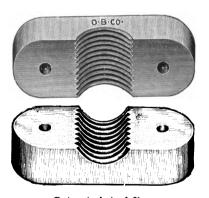
Width, 11/4 inches. Hole, 3/8 to 1/6 inch.

Will take Insulated Wires No. 2 to No. 2-0 B. & S. Gauge. Standard package contains 250 Cleats.

CODE WORD.

NO.

Erodebamus. 



Cut 1/2 Actual Size.

Length, 3¾ inches. Height, 138 inches.

Width, 13/8 inches. Hole, ¾ to 1 inch.

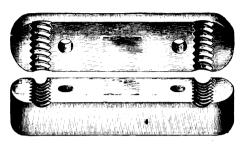
Will take Stranded Insulated Wires No. 4-0 to 350,000 C. M. Standard package contains 250 Cleats.

CODE WORD.

NO.

Erodimus.

### Porcelain Cleat.



Cut 2/3 Actual Size.

Length, 3% inches.

Width, 34 inch.

Height, 11/8 inches.

Holes, 1/8 to 3/8 inch.

Will take Insulated Wires No. 14 to No. 8 B. & S. Gauge. Standard package contains 1000 Cleats.

CODE WORD. NO.

Pappaveram. 4811—Two Wire Cleats.......Per 1000 Pairs, \$ 32 00

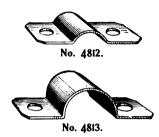
# Lamp Cord.



CODE WORD.	NO.									
Parallelam.	4815-No.	14 B.	& S.	Cotton	Covered	l	Per	Yard,	<b>\$</b> 0	21
Paraturam.	4816—"	16	"	"	"		"	44		12
Paraveram.	4817 "	18	66	44	66		"	"		Λq

# Brass Wiring Cleats.





These Cleats are shown full size in the above cuts.

# Socket Bushings.





CODE WORD.	NO.						
Paciscam.	4780—Bu	shing,	Hard	Rubber	 $\dots$ Per	100,	\$ 0.75
Pactitiam.	4781	"	Soft	44	 "	"	80

# Wire Lamp Guard.



THE Lamp Guard here shown is simple and substantial in construction, and neat in appearance. It is made of steel wire with a silver luster finish. There are no screws to loosen and fall out, the Guard being held securely in place by an adjustable wire clamp. The corrugations on the wire prevent the Guard from breaking.

CODE WORD.	NO.											
Erogatus.	7792—G	uard	for	16 C.	P.	$\textbf{Lamp}\dots$		1	Per l	Dozen,	\$ 2 0	)()
Erogemus.	7793—	"	"	32 C.	P.	"	• • • • • • • • • • • • • • • • • • • •		"	44	2 8	50

#### Shade Holder.



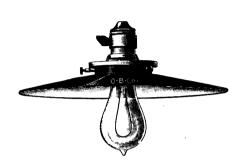
#### Polished Brass, Made to Fit Any Regular Socket.

CODE WORD.	NO.	
Palpatam.	4796—Holder, 2½ inch	70

# Incandescent Lamp Shades.

#### Tin.

#### For 21/4 Inch Shade Holder.





Nos. 7794-7796.

Nos. 7797-7799.

THESE Shades have a green finish outside and a white enamel inside. The prices of them, as listed below, do not include shade holders or lamp sockets.

CODE WORD.	NO.					•				
Erogitatus.	7794—Flat,	Tin,	Diamet	er 8 i	nche	es	Per	Dozen,	\$ 1 '	75
Erramus.	7795—''	4.6	66	10	"		66	"	2	25
Erraturus.	7796—"	"	"	12	"		"	"	3	00
Erravimus.	7797—Deep Cone,	"	66	8	"		"	"	2	25
Erronibus. .	7798— '' ''	"	66	10	"		"	"	3	00
Eructamus.	7799— '' ''	"	"	12	"		"	"	4	00

### Opal.

#### For 21/4 Inch Shade Holder.





No. 4801.

CODE WORD

No. 4802.

CODE WORD.	110.										
Pandatam.	4801—Opal	Crimped,	Diameter	8 i	inches	3	Per	Dozen,	\$ 2	2 00	
Pandioniam.	4802— ''	Plain,	"	8	"			"	2	: 00	

# Lamp Sockets.







No. 1588.

CODE WORD.  Applicabam.	NO. 1590—Keyless So	cket,	Westinghouse	Base	 EACH. \$ 0 30
Applicitam.	1591 "	66	Edison	44	 30
Applorabam.	1592 "	"	т. н.		 30
Appetebam.	1587—Key	44	Westinghouse	"	 33
Appetissam.	1588—"	"	Edison	"	 33
Applaudam.	1589—"	"	т. н.	"	 33

## Wall Sockets.



No. 1597.



No. 1595.

CODE WORD.	NO.				EACH.
Apposcam.	1596—Keyless	Wall Socket,	Westinghouse Bas	e	\$ 0 40
Apposcebam.	1597— "	"	Edison "	Remov. Ring	30
Apposueram.	1598— "	"	т. н. "		40
Apponam.	1593—Key	"	Westinghouse "	•••••	44
Appone bam.	1594—"	"	Edison "	Remov. Ring	44
Apportabam.	1595—"	"	т. н. "		44

In ordering Lamp Sockets specify the style of lamp base (see page 347) with which they are to be used.

# Porcelain Weatherproof Sockets.





CODE WORD.	NO.		EACH.
Divinatam.	2875—Westinghouse	Base	 \$ 0 32
Diviseram.	2876—Edison	"	 32
Divitabam.	2877—Т. Н.	44	 32

## Porcelain Sockets.

## Key.



CODE WORD.	NO.	EACH.
Evaderemus.	7800—Westinghouse Base	\$ 0 36
Evadimus.	7801—Edison "	36
Evagaturus.	7802T. H. "	36

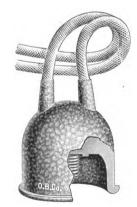
In ordering Lamp Sockets specify the style of lamp base (see page 347) with which they are to be used.

## Bragdon Weatherproof Socket.



EXTENSION edge carries the drip away from the lamp and socket. Method of wiring at the top removes the strain from the socket itself and places it on the porcelain. Extra hole in porcelain at top allows for suspension by cord if desired.

# Mica Weatherproof Sockets.



CODE WORD.	NO.				
Divolutam.	2878-Westinghouse	Base	 .Each,	\$ (	25
Divulgabam.	2879—Edison	"	 . "		2
Divulsam.	2880—T. H.	"	 . "		25

In ordering Lamp Sockets specify the style of lamp base (see page 347) with which they are to be used.

## Weatherproof Receptacle.

With Side Wires.



CODE WORD.

NO.

Docturam.

2885—Edison Base ...... Each, \$ 0 40

## Porcelain Receptacle.

For Cleat Work.



CODE WORD.

Appronatam. 1603—Edison Base ...... Each, \$ 0 18

# Porcelain Receptacle. For Concealed and Moulding Work.



CODE WORD. NO.

# Attachment Plugs. Fusible.



These Plugs are made of porcelain and fitted with fuse connections.

CODE WORD.	NO.					
Confisurus.	6958—Westinghouse	Base	·	Each,	\$ 0	22
Confiximus.	6959—Edison	"		. "		22
Conflamus.	6960—T. H.	"		. "		22

In ordering Attachment Plugs specify the style of lamp base (see page 347) with which they are to be used.



## Styles of Lamp Bases.



Edison or E Base.



Thomson-Houston (T. H.) or B Base.



Westinghouse or A Base.



United States or C Base.



Brush-Swan or D Base.



Mather-Perkins or M Base.

In ordering Lamps, Sockets, Receptacles, etc., the style of base desired (as shown above) should be specified.

## Ohio Incandescent Lamp.



For description and price list see opposite page.



## Ohio Incandescent Lamp.

WE claim for the Ohio Lamp that it will maintain its candle power during the first 400 hours it burns, better than any other lamp on the market, owing to the superior filament which is used and the high degree of exhaustion obtained by the chemical process employed. In the appended list are included only those candle powers in the standard types which are most generally used, but we are prepared to furnish on short notice other sizes, designs and finishes regularly made.

For electric traction service this Lamp is made with a special anchored filament to withstand the jars and vibrations due to the jolting it receives in service, as well as the fluctuations of voltage on the line. It is tested with especial care for uniform voltage and wattage and is designated in the price list as the "Railway Type."

				<del></del>	
CODE WORD.	NO.				
Parendam.	4818-Lamp,	8 C. P.,	45 to 130 Vo	olts	Each, \$ 0 34
Parentabam.	4819 ''	8 "	150 " 260 "	"	" 41
Divenditam.	2869 ''	16 "	45 " 130	"	" 34
Parentelam.	4820—''	16 "	45 '' 130 '	" Railway Type	" 34
Parentiam.	4821— ''	16 "	150 " 260	"	
Pariandam.	4822 "	16 ''	150 " 260	" Railway Type	" 41
Diversam.	2870 ''	20 "	45 " 130	· · · · · · · · · · · · · · · · · · ·	"
Pariatam.	4823—"	20 "	45 '' 130 '	" Railway Type	" 34
Parilitiam.	4824 ''	20 "	150 " 260	··	" 41
Parochiam.	4825—"	20 "	150 " 260	" Railway Type	" 41
Divertebam.	2871 "	25 ''	45 " 130	"	" 34
Parodiam.	4826— "	25 ''	150 " 260		" 41
Divexabam.	2872 ''	32 ''	45 '' 130 '	"	" 57
Parricidam.	4827—"	32 "	150 " 260	"	" 68
Dividam.	2873—"	50 ''	45 " 130	· · · · · · · · · · · · · · · · · · ·	" 1 02
Particulam.	4828 "	50 ''	150 " 260	"	" 1 57

Prices are for Lamps based with Edison or Sawyer-Mann (Westinghouse) Bases. For Lamps with other bases an additional net charge is made as follows:

Thomson-Houston, United States and Brush-Swan Bases	Each,	1	cent.
Mather-Perkins Base	. "	3 (	cents.

Standard barrel quantity not less than 200 for 8, 16, 20 and 25 C. P. Lamps, and 100 for 32 and 50 C. P. Lamps. Standard packages may be made up of assorted candle powers and voltages.

In ordering Lamps state style of base (see page 347) voltage and efficiency in watts per candle power required.



#### "Diamond H" Switches.

#### Single Pole Type.

For 250 Volt Circuits.









Nos. 7871 and 7873.

Nos. 7872 and 7874.

In design and construction the "Diamond H" Switches illustrated above and on the following page, represent the latest and most approved practice in switch manufacture. The parts of the mechanism subject to wear are made of hardened steel, and the knife contacts are of spring bronze. The covers are lined throughout with fibre formed in one piece, and the Switches, as listed below, are furnished with the base notched on the lower edge to receive the wires, when used for cleat work. Sheet mica insulation is used between the current carrying parts and the mechanism. The switch plate is loosely carried by the mechanism, allowing it to adjust itself in the contact clips.

CODE WORD.  Evaginamus.	no. 7871— 5 А	mperes,	Single	Pole,	without	Dial,	for	250	Volts	EACH. \$ 0 40
Evallendus.	7872 5	"	"	"	with	"	"	250	"	40
Evaluimus.	787310	"	"	"	without	"	"	250	"	50
Evaporatus.	787410	"	"	"	with	"	"	250	"	50

### "Diamond H" Switches.

Single Pole Type.

For 500 Volt Circuits.



No. 7875.

A description of this Switch is given on the opposite page. As regularly furnished, it is intended for cleat work, the base being notched to receive side wires.

CODE WORD.	NO.								EACH.
Evaserimus.	7875—5 A	mpere	s, Single	Pole,	without	Dial,	for 500 V	olts.	 \$ 0 50
Evastandus.	7876—5	"	"	66	with	"	" 500	"	 50

#### Two Circuit Switch.



THE Two Circuit Switch is for use on electric cars where there are four lights inside, and one at each end outside the car. The four inside lights, together with one end light, are turned "on" and "off" successively by the first half revolution of the switch handle; the second half revolution turns "on" and "off" successively the inside lights and the other end light.

CODE WORD.	NO.	EACH.
Evastatus.	7877—5 Amperes, Two Circuit, for 500 Volts	\$ 0 90



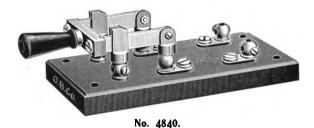
# Baby Knife Switch. For 250 Volt Circuits, Porcelain Base.



THESE Switches, which are single throw and single pole, are furnished with special combination binding posts, and can therefore be used for cleat, concealed or moulding work. Copper blades and porcelain bases.

CODE WORD.	NO.					
Domitandam.	2894—15 A	Amperes,	Single	Pole	 Each,	\$ 0 34
Domnicam.	2895 - 25	6.6	"	"	 	44

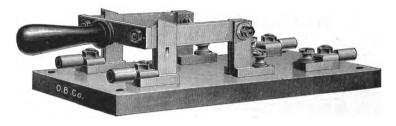
# Baby Knife Switch. For 500 Volt Circuits, Slate Base.



THIS is an all copper Switch, made with round terminals, highly finished and nicely proportioned. It is mounted on a polished black slate base. It is single throw, single or double pole, and with or without fuse connections, as ordered.

CODE WORD.	NO.						
Passiram.	4837—25 A	mperes,	Single	Pol	e	.Each,	\$ 0 80
Pastinabam.	4838 - 25	"	Double	"		. "	1 35
Patefaciam.	4839 - 25	"	Single	"	Fused	. "	90
Patefiam.	4840 - 25	"	Double	"		. "	150





THE Imperial Knife Switch is constructed of first class materials, and while it is sold at a very reasonable price it will be found equal, both mechanically and electrically, to many of the higher grade switches on the market. The blades and jaws are of pure, hard copper, polished and lacquered, and the Switches are mounted on slate bases. They are made only in the single throw type with front connections.

For 250 Volt Circuits.

Cata Want	. Capacity i		With Fuse (	Connections.	Without Fuse Connections.		
Code Word.	No.	Amperes.			Single Pole.	Double Pole.	
Evastemus. Eveneramus. Eveniendus. Eventus.	7878 7879 7880 7881	25 50 75 100	\$ 1 72 2 15 3 30 4 16	\$ 2 72 3 30 5 75 6 86	\$ 1 15 1 72 2 45 3 00	\$ 2 15 2 72 4 16 5 75	

#### For 500 Volt Circuits.

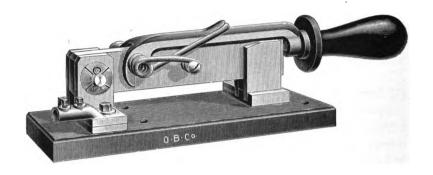
c . w .		Capacity in	With Fuse (	Connections.	Without Fuse Connections.		
Code Word.	No.	Amperes.	Single Pole.	Double Pole.	Single Pole.	Double Pole	
Evergemus. Eversurus. Evexus. Eviadibus.	7882 7883 7884 7885	25 50 75 100	\$ 2 24 2 80 4 29 5 41	\$ 3 54 4 29 7 48 8 92	\$ 1 50 2 24 3 19 3 90	\$ 2 80 3 54 5 41 7 48	

In telegraphing, where reference is desired to be made to the kind of Switch, use the code word Evibrandus for "With Fuse Connections, Single Pole;" Evibratus for "With Fuse Connections, Double Pole;" Evibremus for "Without Fuse Connections, Single Pole;" and Eviceramus for "Without Fuse Connections, Double Pole," placing it after the regular code word designating the capacity of the Switch.



## Standard Quick Break Switches.

#### For Circuits of 500 Volts and Less.

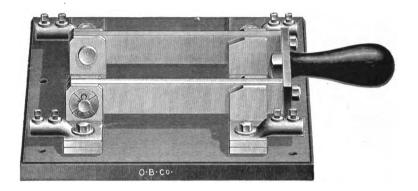


THE Standard Quick Break Switch is undoubtedly the best switch of its kind ever offered at a reasonable price. It is of our own design and manufacture, and is constructed throughout of the best materials. Being of the quick break type, it is especially suitable for 500 volt circuits, where a quick, wide break is necessary. It is positive in its action, and may be relied upon to open the circuit without any trouble up to, and beyond, its rated capacity. The blades and jaws are of hard, cold rolled copper, insuring a perfect contact, and the base of the Switch is of selected slate. It is furnished with front connections, as shown in the above illustration, and the metal parts are polished.

	Single 1	Pole.		Double Pole.				
Code Word.	No.	Capacity in Amperes.	Price Each.	Code Word.	No.	Capacity in Amperes.	Price Each.	
Evigilatus. Evigilemus. Eviguimus. Evincemus. Evincturus. Evinximus. Eviramus.	7826 7827 7828 7829 7830 7831 7832	100 200 300 400 600 800 1000	\$ 4 70 9 00 10 50 12 40 15 40 20 25 24 00	Eviraturus. Eviravimus. Evitabimus. Evolitamus. Evolutus. Evolvendus. Evomeremus.	7833 7834 7835 7836 7837 7838 7839	100 200 300 400 600 800 1000	\$ 10 15 17 25 21 00 24 75 30 75 40 50 48 00	

### Standard Station and Line Switches.

#### For Circuits of 500 Volts and Less.



THESE Switches are of our own design and manufacture, and are equal to most of the higher priced switches at present on the market. They are constructed with an extra long break, making them suitable to carry safely their rated capacity in amperes up to 500 volts. They have hard, cold rolled copper blades and jaws and are mounted on slate bases and furnished with front connections, as indicated in the illustration above. The terminals are separable to facilitate connecting up, and are supplied with cap screws, as shown. The wires may be secured in the terminals either by means of these screws or by soldering them in place. The metal parts of the Switches are polished.

Single Pole.				Double Pole.				
Code Word.	No.	Capacity in Amperes.	Price Each.	Code Word.	No.	Capacity in Amperes.	Price Each.	
Evomimus.	7840	100	\$ 4 70	Exacuimus.	7847	100	\$ 10 1	
Evulgandus.	7841	200	9 00	Exaequamus.	7848	200	17 2	
Evulgatus.	7842	300	10 50	Exagitamus.	7849	300	21 0	
Evulgemus.	7843	400	12 40	Exaltandus.	7850	400	24 7	
Exabusurus.	7844	600	15 40	Exaltatus.	7851	600	30 7	
Exactibus.	7845	800	20 25	Exaltemus.	7852	800	40 5	
Exacturus.	7846	1000	24 00	Examinamus.	7853	1000	48 (	

## "P. & B." No. 2 Compound.



THE "P. & B." Compound is unexcelled for its general insulating, water, oxide and alkali proof properties. It is very penetrating, tenacious and elastic, and is especially valuable for all purposes where a durable preservative and a high insulating paint is required. It may be used with equally successful results on woods, metals or fabrics, for either indoor or outside work, such as painting armatures, fields, iron and wood poles, switch boxes, feeder and trolley wire supports, etc.

CODE WORD.	NO.			
Pervariam.	5043—Barrels of about 50 Gallons	Per	Gal.,	\$ 1 25
Pervaseram.	5044—Half Barrels " 30 "	"	"	1 35
Perveham.	5045—Ten Gallon Can	"	"	1 40
Pervehebam.	5046—Five " "	"	"	1 40
Pervenatam.	5047—One " "	"	"	1 50

## Black Asphaltum Paint.

A jet black, quick drying paint with a brilliant gloss and free from sediment. Recommended as a protective paint for exposed iron and wood work.

CODE WORD.	NO.			
Perveneram.	5048-Barrels of about 50 Gallons	Per	Gal.,	\$ 0 61
Perveniam.	5049—Half Barrels " 30 "	. "	"	70
Pervertam.	5050—Ten Gallon Can	. "	"	84
Perviabam.	5051—Five " "	. "	"	90

#### Armalac.



ARMALAC is an insulating "Compound" selected after most careful and rigorous examinations, extending over several years, of all the material available for the uses for which it is intended. It was produced primarily for armature and field work and in this particular line has no equal. It dries quickly and thoroughly, but remains plastic and effectually prevents oxidization of copper when applied either to the bare surface or the insulation surrounding it.

CODE WORD.	NO.	•	
Pervixeram.	5056—One Gallon Can	Each,	\$ 2 00

## Orange Shellac Varnish.

M ADE of best quality of shellac gum dissolved in alcohol. This is unsurpassed as a finishing varnish for general purposes and is especially suited for armatures, field coils, etc.

CODE WORD.  Pervolgam.	NO. 5057—Ten G	allon	Can	 Per	Gal.,	\$ 4	18	35
Pestiferam.	5058—Five	"	"	 "	"	4	4 9	0
Pestimam.	5059—One	"		 "	"	4	4 9	90

### Uncut Sheet Mica.



THE Mica listed below is of carefully selected first quality stock, and is especially suitable for electrical work.

	No. Assortment.		Will	Detacas		
Code Word.		Width.	Length.	Square Inches.	Price per Pound.	
Exanclamus. Exanimemus. Exantlatus.	7886 7887 7888	No. A-1 '' 1 '' 2	4 to 8 in. 3 "6 " 2 "4 "	8 to 10 in. 6 " 9 " 5 " 8 "	35 to 47 24 " 35 15 " 24	\$ 6 28 4 40 2 50

#### Hard Sheet Fibre.

Fibre is furnished in sheets approximately 42 x 66 inches. Unless otherwise specified, red Fibre will be supplied.

Code Word.	No.	Thickness.	Approximate Weight per Sheet.	Price per Pound.
Exaperimus.	7889	38 inch. 16 '' 18 '' 3 '' 16 ''	4 pounds	\$ 0 45
Exaptamus.	7890		8 "'	40
Exaramus.	7891		16 "'	40
Exaraturus.	7892		24 "'	40
Exaravimus.	7893		32 "'	40

### Sheet Asbestos.

THIS material is especially suitable for insulating switches, cutouts, wires, etc. from adjoining wood work. It is regularly furnished in sheets 40 x 40 inches.

Code Word.	No.	Thickness.	Approximate Weight per Sheet.	Price per Pound.
Exarenamus.	7894	1 inch 1 '' 1 8 '' 3 8 '' 1 4 ''	2 to 2½ pounds	\$ 0 10
Exarmandus.	7895		3¾ " 4¼ "	10
Exarmatus.	7896		7½ " 8 "	10
Exarmemus.	7897		11½ " 12 "	10
Exarsimus.	7898		13½ " 14½ "	10

#### Positive Lock Washer.



POR simplicity and positiveness of action, superiority of material and uniformity of temper the Positive Lock Washer is without equal. The body of the Washer carries the load of compression and the spring is not affected by continued use. When subject to vibration or jarring the engaging points on the Washer embed themselves more firmly in the surfaces against which they bear and form a positive lock. It is reversible and does not injure the bolt or other parts with which it is assembled. Its utility is not impaired by using many times.

Code Word. No.	Na	Diameter	Size o	f Steel.	Delas man 1000
	NO.	of Bolt.	Thickness.	Width.	Price per 1000
Perunctam.	5034	½ inch	& inch	3 inch	\$ 11 90
Perungam.	5035	1/2 "	3 "	1,2 "	12 00
Perungebam.	5036	5% "	16 3 '' 16 3 ''	1/4 "	12 30
Perunxeram.	5037	34 ''	3 "	1/4 "	12 60
Perurendam.	5038	3/4 ''	.266 ''	.266 "	12 70
Perurgeam.	5039	7/8 "	1/4 "	5 "	14 80
Perusturam.	5040	ĩ "	1/4 "	3/8 "	19 90

#### Rubber Gloves.



THE above cut shows the Heavy Gauntlet Glove. The Heavy Short Glove is similar except that it is without gauntlet. Both styles of Gloves are furnished in sizes 13, 14 and 15, which correspond to small, medium and large gloves, and in ordering, the size desired should be specified.

CODE WORD.	NO.
Progeram. Progerebam.	5306 -Heavy Short Gloves

## Stombaugh Guy Anchor.

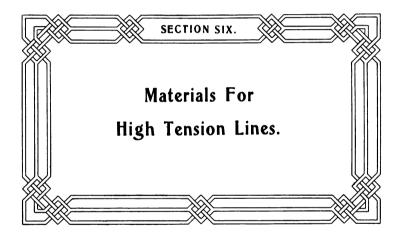


POR anchoring to the ground telephone and electric railway poles or anything of a similar nature, this device will be found particularly suitable. It is installed by simply screwing into the ground in the same manner as an auger, and all boring, digging and tamping is avoided, the ground being left undisturbed. The blade, which is of helical shape, is secured at the end of an iron rod, the other extremity of which is formed into an eye or opening, which projects above the surface of the ground. In installing the smaller sizes up to 6 inches, it is necessary to use a wrench, as the cross-section of the rods is not sufficiently great to stand the twisting strain. With the larger sizes an iron or wood bar may be placed through the eye of the

Nos. 5736-5738.

Anchor, to use as a handle in screwing it into the ground. These Anchors should be placed in the ground at the same angle as the guy wire, and when properly installed, it is impossible for them to pull out.

Code Word.	No.	Diameter of Blade.	Size of Rod.	Weight.	Price Each.
Scaturiam.	5736	3½ inches	ft. long X 5 in. round	2½ pounds	\$ 0 70
Scelerabam. Scenariam.	5737 5738	5 "	X 1/8	4	1 15 2 25
Scepticam.	5739	8 "	X 7/2	7¼ '' 38 ''	10 00
Schediam.	5740	10 "		50 ''	15 00
Scibam.	5741	12 "		80 ''	20 00
CODE WORD.	NO.				·
Scientiam.		Wrench, for	inch Guy Anchor	Eag	h, \$ 2 40
Scillitam. Scindendam.	5743— 5744—	"	" " "		3 00 5 10



#### Porcelain and Glass Insulators.

#### For High Tension Lines.

THE constantly increasing use of alternating currents at high potential for the transmission of power over long distances, has demanded the highest class of engineering skill in the design and construction of Insulators, Pins, etc., employed in insulating the conductors. On the following pages will be found an extensive line of Porcelain and Glass Insulators, together with suitable Pins for supporting them, which represents the latest and highest development in the manufacture of materials of this kind, being designed especially to meet the conditions under which they are intended to be used.

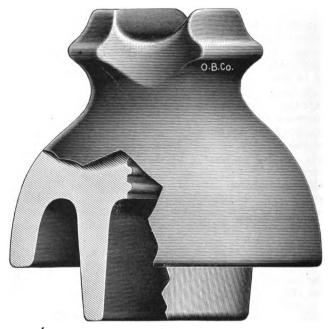
In the Porcelain Insulators illustrated on pages 362 to 376 a special high grade of porcelain is employed, which is made from a combination of foreign and domestic clays, especially selected on account of the great mechanical strength and high insulating properties which they possess. These Insulators are carefully inspected for mechanical defects, etc. before shipment, and are submitted to a rigid electrical test at approximately double the working line voltage for which they are designed. surface of these Insulators is covered with a smooth brown glaze, which tends to prevent the accumulation of dirt, dust, etc. on the Insulator, thereby reducing to a minimum the surface leakage. This glaze is applied to the Insulator simply to make it smooth, and is not intended as an insulating medium, although in some makes of insulators now on the market the glaze is largely depended upon for insulation. Experience has demonstrated that porcelain insulators are much stronger, size for size, than glass, either subjected to a crushing or lateral strain, or when accidentally Porcelain insulators also have the advantage of being less likely to crack in handling, less liable to breakage when unevenly heated by the sun, and their insulating characteristics, on the whole, are better than glass. The brown glaze, or finish renders the Insulator less conspicuous on the pole than white porcelain would be, so that it is not so liable to be used as a target by persons mischievously inclined.

The larger types of these Insulators are usually shipped with the several shells separately packed, as by this means they may be packed in much smaller space, and are not nearly so apt to be broken in transit. A considerable saving in freight is also effected by this means. Insulators so packed are cemented by the customer at destination, and the expense of doing this should not exceed one cent each for both cement and labor. Where the several shells are shipped separately, each shell is subjected to an electrical test before shipment.

The Glass Insulators listed on pages 377 to 391 are made of a grade of glass which is particularly adapted to this work, and thoroughly and evenly annealed during the process of manufacture. Several of these Insulators are provided with points or teats on the lower rim of the petticoat, which serve to attract into drops the moisture on the outer and inner surfaces of the insulator. The moisture dropping from these points is drained off without coming into contact with the pin.

We are also prepared to furnish, on short notice, Porcelain Tubes for insulating high tension lines where they pass through walls, etc. These Tubes are supplied in various lengths and diameters, to adapt them for different sizes of wires, thickness of walls, and line voltages.

#### Double Petticoat.



Cut 3/4 Actual Size.

THIS Insulator may be used with any of the pins illustrated on pages 392, 394 and 396, having a standard threaded end.

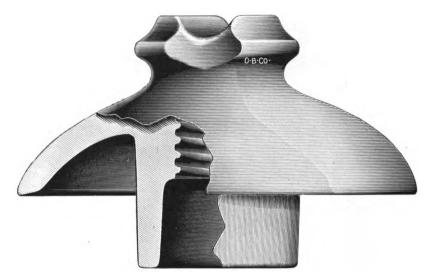
Maximum Working Voltage	.10,000.
Test Voltage	.40,000.
Diameter43/8	inches.
Height4	"
Width of Top Groove       1½         "Side"       1½	"
" " Side "	4.6

Approximate weight,	each	13/4	pounds.
"	per 1000, packed	2000	- "

Packed approximately 150 in a barrel.

CODE WORD. NO.

#### Double Petticoat.

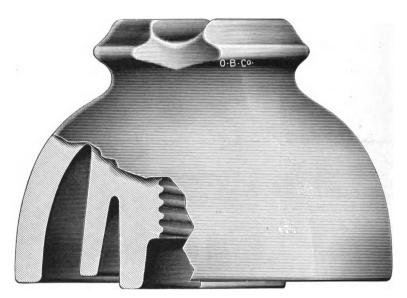


Cut 3/4 Actual Size.

THIS Insulator may be used with any of the pins illustrated on pages 392, 394 and 396, having a standard threaded end. When a steel pin with porcelain base is required, either the No. 7960 or 7962 is recommended.

Ma: Tes	ximum Working Voltage		. <b>15</b> ,000. . <b>40</b> .000.
Dia	meter	$\dots \dots $	inches.
Wie	dth of Top Groove ' '' Side ''	3/ <sub>4</sub> 3/ <sub>4</sub>	"
	e weight, each	ed	1½ pounds.
CODE WORD.  Exercitus.	NO. 7970—Insulator		Each, \$ 0 31

#### Triple Petticoat.



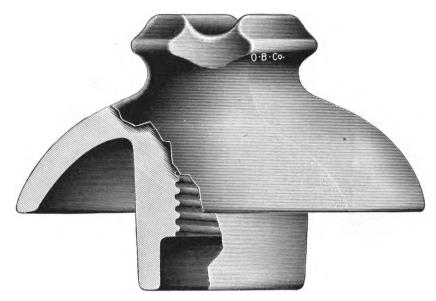
Cut 3/4 Actual Size.

WITH this Insulator may be used any of the pins illustrated on pages 392, 394 and 396, having a standard threaded end, but the Nos. 7953, 7961 and 7963 are not recommended.

Maximum Working Voltage	.20,000.
Test Voltage	.50,000.
Diameter5	inches.
Height	"
Width of Top Groove	"
Width of Top Groove       3/4         "Side"       3/4	" "

Approximate weight,	eachper 1000, packed	. 3 .3250	pounds.
Pack	ted approximately 80 in a barrel.		

#### Double Petticoat.



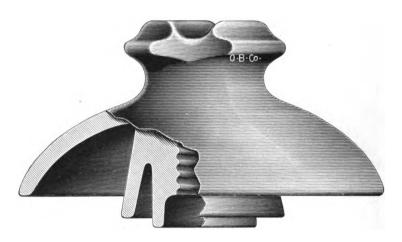
Cut 3/3 Actual Size.

WITH this Insulator may be used any of the pins illustrated on pages 392, 394 and 396, having a large threaded end, but the Nos. 7860, 7861, 7957 and 7968 are not recommended.

Maximum Working Voltage	.20,000.
Test Voltage	50,000.
Diameter $6\frac{1}{2}$	inches.
Height41/4	"
Width of Top Groove 34	"
Width of Top Groove.       3/4         "Side"       3/4	"

Approximate	weight,	eachper 1000, packed	. 2¼ .2930	pounds.
	Pack	ed approximately 75 in a barrel.		

CODE WORD. NO.



Cut 1/2 Actual Size.

WITH this Insulator may be used any of the pins illustrated on pages 392, 394 and 396, having a standard threaded end, but the Nos. 7953, 7960, 7961 and 7963 are not recommended.

Maximum Working Voltage	25,000.
Test Voltage	
Diameter 7½	
Height	"
Width of Top Groove1	"
Width of Top Groove	6 6

Approximate		each	
"	17	per 1000, packed4	090 - ''
	_	P , P ,	

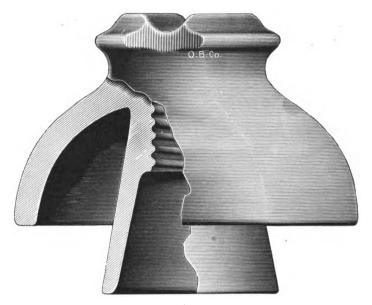
Packed approximately 55 in a barrel.

CODE WORD. NO.

Exerturus. 7973 - Insulator......Each, \$ 0 77

#### Double Petticoat.

One Piece.



Cut 1/2 Actual Size.

THIS Insulator is intended for use with pins having a large threaded end, but only the following pins illustrated on pages 392 and 396, are recommended: Nos. 7862-7865, 7868-7870 and 7968.

Maximum Working Voltage	25,000.
Test Voltage	
Diameter7	inches.
Height	"
Width of Top Groove 1	"
" "Side "1	"

Approximate	weight,	eachper 1000, packed	4 pounds5900 "'
	Pacl	ked approximately 30 in a b	arrel.
CODE WORD.	NO.		

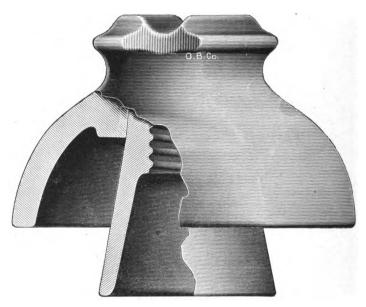
See page 361 for description.

Exertus.

7974—Insulator...... Each, \$ 0 77

#### Double Petticoat.

Two Piece, Fused.



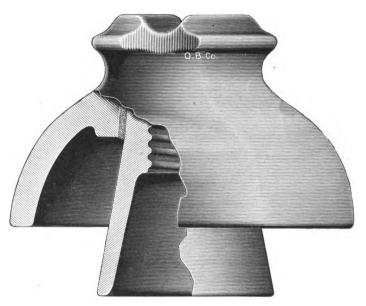
Cut 1/2 Actual Size.

THIS Insulator is intended for use with pins having a large threaded end, but only the following pins illustrated on pages 392 and 396, are recommended: Nos. 7862-7865, 7868-7870 and 7968.

Maximum Working Voltage	
Test Voltage	70,000.
Diameter	7 inches.
Height	5¾ ''
Width of Top Groove	1 ''
Width of Top Groove	1 ''
Approximate weight, each per 1000, packed	4 pounds5900 "'
Packed approximately 30 in a barre	el.
CODE WORD. NO.	D 1 0 0 ==
Exestamus. 7975Insulator	Each, \$ 0 77

#### Double Petticoat.

Two Piece, Cemented.

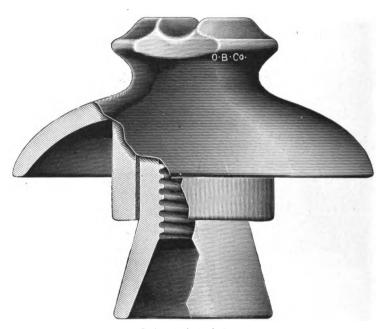


Cut 1/2 Actual Size.

THIS Insulator may be used with the lower petticoat resting on the cross arm, in which case the No. 7958 Pin illustrated on page 394 is recommended. This method of support gives additional strength to both the Insulator and pin. The Insulator will fit pins having a large threaded end.

	king Voltage	
Diameter		inches.
Height		3/4
" " Side	Groove 1	"
Approximate weight, e	acher 1000, packed	4¾ pounds.
	d approximately 30 in a barrel.	
CODE WORD. NO.		
Exfoliamus. 7976—Insulat	tor	Each, \$ 0 88
	~	

## Porcelain Insulator. Double Petticoat.



Cut 1/2 Actual Size.

M AY be used with any of the pins (illustrated on pages 392, 394 and 396) having a large threaded end, except the No. 7957, which is not recommended.

Maximum Working Voltage	.30,000.
Test Voltage	70,000.
Diameter7½	inches.
Height 6¼	" "
Width of Top Groove	" "
Width of Top Groove         1           "Side"         1	"

Approximate weig	rht, each per 1000, packed	$4\frac{1}{4}$ pounds. $5260$
1	Packed approximately 38 in a l	harrel

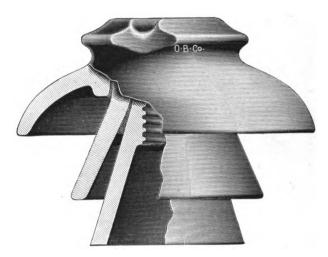
CODE WORD. NO. Exhalamus. 7977--Insulator..... ..... Each, \$ 0 77



Cut 1/3 Actual Size.

THIS Insulator is intended for use with pins having a large threaded end, but only the Nos. 7864-7870 and 7968, illustrated on pages 392 and 396, are recommended.

Maximum Working Voltage	30,000.
Test Voltage	
Diameter81	½ inches.
Height7	
Width of Top Groove         7/4           "" Side ""         7/4	΄ <b>΄ ΄</b>
" " Side "	Ŕ <b>''</b>
Approximate weight, each per 1000, packed	
CODE WORD. NO.	
Exhausimus. 7978—Insulator	Each, \$ 1 32



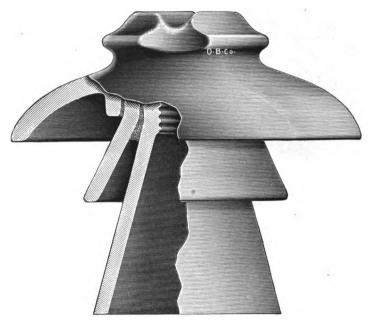
Cut 1/3 Actual Size.

THIS Insulator may be used with the pins illustrated on pages 392, 394 and 396, having a large threaded end, but the Nos. 7860-7863, 7957-7959 and 7964 Pins are not recommended for this purpose.

	kimum Working Voltage t Voltage			
Dia	meter	9½	inches.	
	ght		"	
	" " Side "		"	
66	e weight, each '' per 1000, packed	• • • • • • • • • • • • • • • • • • • •	11,100	ounds.
Ti	nis Insulator is shipped eit the several shells pac		r with	
CODE WORD.  Exhibemus.	NO. 7979 — Insulator		Each	, \$ 1 87

See page 361 for description.

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Cut 1/3 Actual Size.

M AY be used with insulator pins having a large threaded end, but on account of the length of the inner petticoat of the Insulator, only the Nos. 7868-7870 and 7968 illustrated on pages 392 and 396, are suitable.

Maximum Working Voltage		40,000.
Test Voltage	]	100,000.
Diameter	L	inches.
Height	1/2	6.6
Width of Top Groove	Ľ	"
Width of Top Groove Side "Side"	3/4	"

to be cemented together by customer.

 CODE WORD.
 NO.

 Exhibuimus.
 7980—Insulator
 Each, \$ 4 40

#### Triple Petticoat.



Cut 1/4 Actual Size.

THIS Insulator may be used with pins having a large threaded end, but on account of the length of the inner petticoat, only the Nos. 7869, 7870 and 7968 illustrated on pages 392 and 396, are suitable.

Maximum Working Voltage	50,000.
Test Voltage	100,000.
Diameter	inches.
Height	66
Width of Ton Croove	"
" "Side " 1	"

Approximate weight, each	14 pounds.
" per 1000, packed	19,000 " "
The several shells of this Insulator are packed	separately,
to be cemented together by customer	•

#### Triple Petticoat.



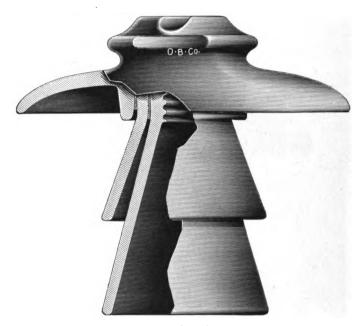
Cut 1/4 Actual Size.

ON account of the height of the inner petticoat of this Insulator, the only pins with which it should be used are the Nos. 7868-7870 and 7968 illustrated on pages 392 and 396.

Maximum Working Voltage	60,000.
Test Voltage	120,000.
Diameter10½	inches.
Height $10^{\frac{1}{12}}$	**
Width of Top Groove       1½         " Side " 1½	
" " Side " 1½	

Approximate weight, each	13 pounds.
" per 1000, packed	14,600 " "
The several shells of this Insulator ar	
to be cemented together by	customer.

CODE WORD.	NO.
Exigemus.	7982—Insulator



Cut 1/4 Actual Size.

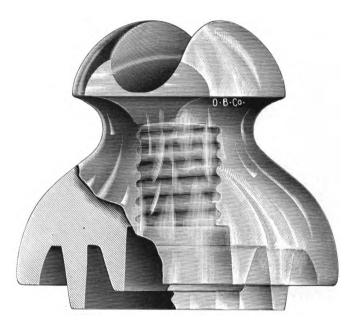
N account of the height of the inner petticoat of this Insulator, the only pins with which it should be used are the Nos. 7869 and 7870 illustrated on page 392.

Maximum Working Voltage	60,000.
Test Voltage	120,000.
Diameter	
Height	4.6
Width of Top Groove	
" Side " 1	"

Approximate weight, each	201/2 pounds.
" per 1000, packed26	6,000 - ''
The several shells of this Insulator are packed sepa	rately,
to be cemented together by customer.	- '

CODE WORD. NO.

# Glass Insulator. Triple Petticoat.

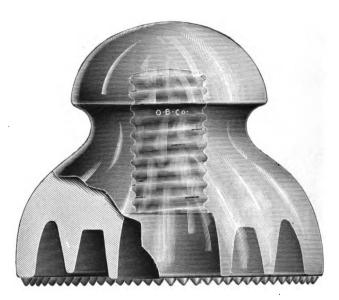


Cut 3/4 Actual Size.

WITH this Insulator may be used any of the pins illustrated on pages 392, 394 and 396, having a standard threaded end, but the Nos. 7961 and 7963 are not recommended.

Dia: Hei:	kimum Working Voltage meterght	$4\frac{1/2}{2}$	5,000. inches.
	e weight, each ' per 1000, packed Packed approximately 12		2 pounds. 2560 "'
CODE WORD.  Eximendus.	NO. 7984—Insulator		Each, \$ 0 09

## Glass Insulator. Triple Petticoat.

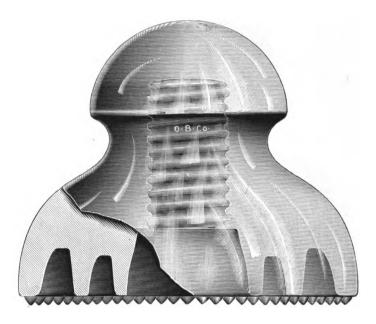


Cut 3/4 Actual Size.

/ITH this Insulator may be used any of the pins illustrated on pages 392 and 394, having a standard threaded end.

Maximum Working Voltage......5,000.

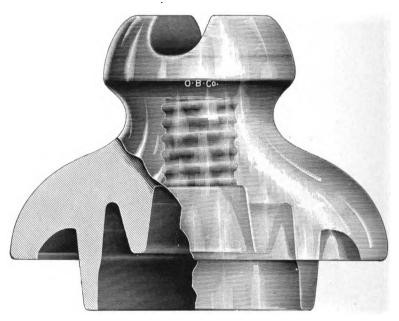
Dia	meter4	¼ inches.
Hei	ight3	3/4 "
Width of Side Groove		3/4 ''
Approximat	per 1000, packed	2400 ''
	Packed approximately 100 in a barre	el.
CODE WORD.  Exmovimus.	NO. 7991—Insulator	Each, \$ 0 20



Cut 3/4 Actual Size.

THIS Insulator may be used with pins having a standard size threaded end (illustrated on pages 392, 394 and 396) but the following pins are not recommended: Nos. 7989, 7953, 7960 and 7962.

Maximum Working Voltage	7,000.
Diameter	$\dots 4\frac{3}{4}$ inches.
Height	33/4
Width of Side Groove	
Approximate weight, each  " per 1000, packed  Packed approximately 100 in a	2550 " ''
CODE WORD. NO. Exoculamus. 7992—Insulator	Each, \$ 0 30

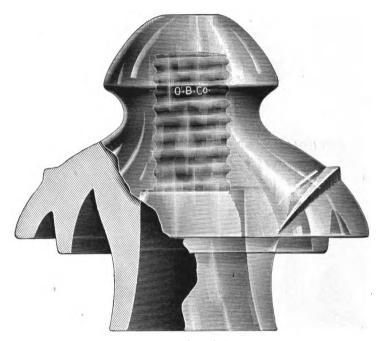


Cut 2/3 Actual Size.

WILL fit insulator pins having a standard threaded end, but is recommended only for use with the following pins illustrated on pages 392, 394 and 396: viz., Nos. 7854-7859, 7956 and 7962-7963.

Maximum Working Voltage		
Diameter6	;	inches.
Height		
Width of Ton Groove	ľ	6.6
Width of Top Groove	i	4.6
Dide	L	

Approximate	weight,	each			31/4	pounds.
"	ii '	per 1000,	packed		4250	- 66
	Pack	ed approx	imately 40 in	n a barrel.		



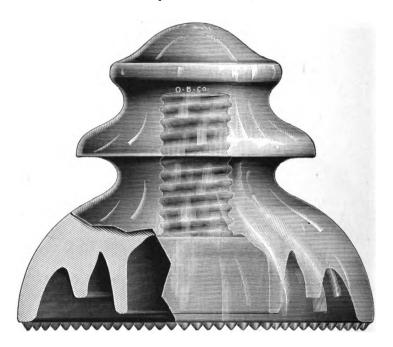
Cut 2/3 Actual Size.

THIS Insulator will fit pins having a standard threaded end, but is recommended only for use with the following pins illustrated on pages 392, 394 and 396: viz., Nos. 7854-7859, 7956, 7962 and 7963.

Maximum Working Voltage	15,000.
Diameter	inches.
Height	
Width of Side Groove 5/8	44
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	

Approximate	weight,	each		3	pounds.
"	n ·	per 1000, packed	d	3500	- "
	Pack	ed approximately	y 50 in a barrel.		

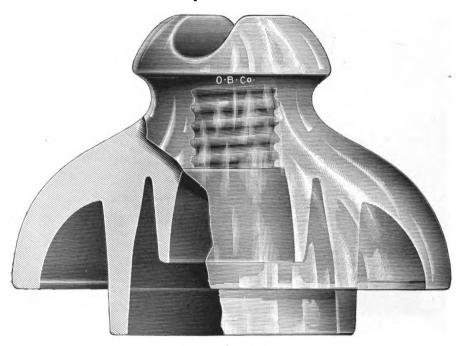
CODE WORD.	NO.		
Eximins.	7985—Insulator	.Each,	\$ 0 17



Cut 2/3 Actual Size.

A NY of the following insulator pins illustrated on pages 392, 394 and 396 may be used with this Insulator: Nos. 7854-7859, 7956 and 7963.

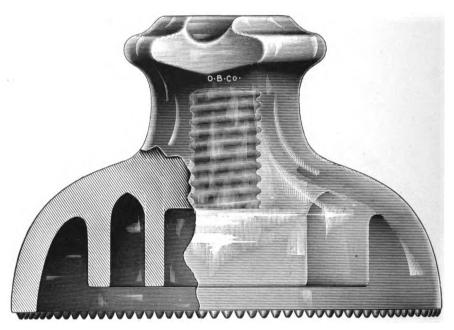
Dia	ximum Working Voltage5½55½	inches.
Hei Wid	ight	<b>4</b> "
Approximat	e weight, each	3 pounds. 3600 "'
CODE WORD.  Exolevimus.	NO. 7993—Insulator	Each, \$ 0 40



Cut 2/3 Actual Size.

THIS Insulator will fit pins having a large size threaded end, but is recommended only for use with the following pins illustrated on pages 392 and 396: viz., Nos. 7862-7870 and 7965-7967.

Dia He	ximum Working Voltage meter	$\dots$ 7 inches. $\dots$ 5 $\frac{1}{8}$
	e weight, each per 1000, packed Packed approximately 34 in a	
CODE WORD. Nauticam.	NO. 4331—Insulator	Each, \$ 0 19

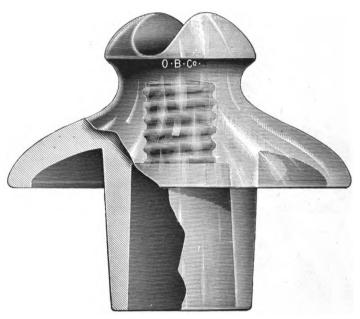


Cut 2/3 Actual Size.

THIS Insulator is furnished with either standard or large size pin hole. The Insulator with standard pin hole will fit the Nos. 7854-7859 and 7963 Pins, and with the large size pin hole will fit Nos. 7862-7870 and 7966-7968, illustrated on pages 392 and 396.

. Ma	ximum Working Voltage	
Dia	ımeter	7 inches.
He	ight	43/4 "
Wie	dth of Top Groove	7/8
Approximat	e weight, each per 1000, packed Packed approximately 30 in a	
CODE WORD.	NO.	
	7994—Insulator with Standard Size Pin 1	
Exoptandus.	7995— " " Large " "	" " 50

### Glass Insulator. Double Petticoat.



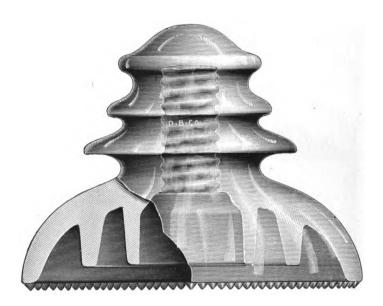
Cut 1/2 Actual Size.

M AY be used with insulator pins having a large size threaded end, but is recommended only for use with the following pins, illustrated on pages 392 and 396: viz., Nos. 7862-7870 and 7965-7967.

Maximum Working Voltage	.20,000.
Diameter7½	inches.
Height	" "
Width of Top Groove	"
Width of Top Groove	"

Approximate weight,	each	4	1¾ pounds.
" "	per 1000, packed		500 · ''
Pack	red approximately 30 in a	barrel.	

CODE WORD. NO.

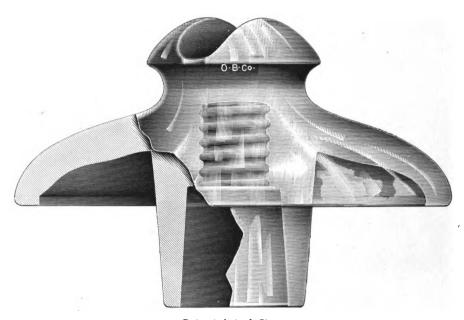


Cut 1/2 Actual Size.

THE Nos. 7854-7859 Pins illustrated on page 392, are recommended for use with this Insulator.

Max	imum Working Voltage		•
Dian	neter	7 inches.	
· Heig	ght	5½ "	
Widt	th of Side Groove	5/8 "'	
Approximate	e weight, each " per 1000, packed Packed approximately 2	5½7200 5 in a barrel.	pounds.
	NO.		
Exoptatus.	7996Insulator		icn, \$ 0 50

# Glass Insulator. Double Petticoat.



Cut 1/2 Actual Size.

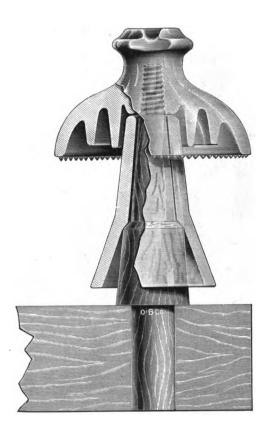
THIS Insulator may be used with pins having a large size threaded end, but the Nos. 7957-7958, 7964 and 7968, illustrated on pages 394 and 396, are not recommended.

Maximum Working Voltage		25,000.
Diameter	9	inches.
Height	3	"
Width of Top Groove	1 1/8	"
Width of Top Groove	Ī ¼	"

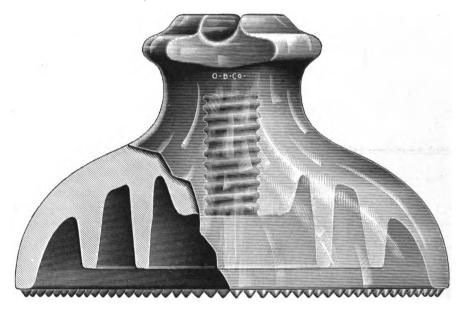
Approximate	weight,	each	packed		$6\frac{1}{2}$ $.9250$	pounds.
	Pack	ed approx	imately 20 in a	barrel.		

CODE WORD.	NO.
Exmoturus.	7987—InsulatorEach, \$ 0 33

### Glass Insulators. With Sleeves.



In the above cut is shown a special form of Glass Sleeve designed for use with the Insulators illustrated on pages 389 and 390. These Sleeves are intended to be used with a wood pin having a shoulder above the shank for supporting the Sleeve, as indicated in the above illustration. By means of this Sleeve the arcing distance of the Insulator is materially increased, enabling it to be used on circuits of higher voltage. The Sleeve also protects the pin from moisture, thereby reducing surface leakage to a minimum. The Nos. 7989 and 7990 Pins listed on page 393 are designed for use where these Sleeves are employed.



Cut 1/2 Actual Size.

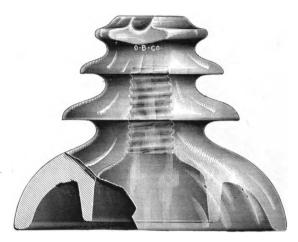
A GLASS Sleeve, as illustrated on the opposite page, can be supplied with this Insulator, enabling it to be used with line voltages up to 40,000 volts. Where this Sleeve is employed, the No. 7989 Wood Pin listed on page 393 is recommended. The Insulator may also be used without the Sleeve, with the Nos. 7854-7859 and 7989 Pins.

Maximum Working Voltage, Insulator	alone30,000.
	with Sleeve, 40,000.
Diameter	
Height	5¾ "
Width of Top Groove	······1 "

Approx. weight, each, Insulator....8¾ pounds, Sleeve....4¼ pounds. per 1000, packed, Insulators, 11,220, Sleeves, 5,280 lbs. Packed approx. 18 Insulators or 32 Sleeves in a barrel.

CODE WORD.	NO.	
Exoptemus. Exorandus.	7997—Insulator	\$ 0 70 1 20

### Glass Insulator. Double Petticoat.



Cut 1/3 Actual Size.

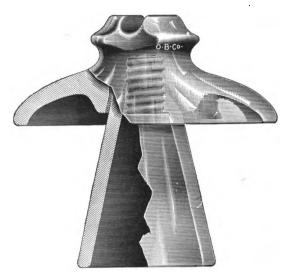
THIS Insulator can be supplied with a glass Sleeve similar to that illustrated on page 388, by means of which the Insulator may be used on circuits of 45,000 volts and less. The No. 7990 Pin, illustrated on page 392, is especially designed for supporting the Insulator and Sleeve together, or the Nos. 7862-7870, 7990 and 7968 Pins are recommended where the Insulator is used alone.

Maximum	Working	Voltage,	Insulator	alone	35,000.
6.6	"	"	"	with Sleeve,	45,000.
Diameter.	• • • • • • • • • • •			8½	inches.
Height				65/8	"
Width of 7	Cop Groov	e			"
" "	Side ''				"

Approx. weight, each, Insulator.....8¼ pounds, Sleeve ....3¾ pounds. " " per 1000, packed, Insulators, 11,120, Sleeves, 4,650 lbs. Packed approx. 18 Insulators or 32 Sleeves in a barrel.

CODE WORD.	NO.				
Exoratus.	7999—Insulato	r Each,	\$ (	0	70
Exornamus.	8000— ''	complete with Sleeve "	•	1	20

### Glass Insulator. Double Petticoat.



Cut 1/4 Actual Size.

O<sup>N</sup> account of the length of the lower petticoat of this Insulator, the only pins with which it should be used are the Nos. 7869 and 7870, illustrated on page 392.

Maximum	Working Voltage	35,000.
Diameter		inches.
Height		"
Width of	Top Groove 11/8	"
"	Side " 1	"

Approximate	weight,	each	. 13½ r	ounds.
"	" "	per 1000, packed	.17,000	"

The upper and lower shells of this Insulator are packed separately, to be cemented together by customer.

CODE WORD.	NO.
Exmovendus.	7988—Insulator Each, \$ 1 65

#### Wood Pins.

#### Standard Threaded End.



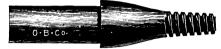
Nos. 1248-1249.



Nos. 7856-7857.



Nos. 7854-7855.



Nos. 7858-7859.

#### Large Threaded End.



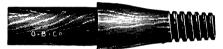
Nos. 7860-7861.



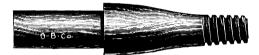
Nos. 7864-7865.



Nos. 7862-7863.



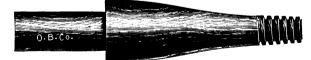
Nos. 7866-7867.



No. 7868.



No. 7869.



No. 7870.



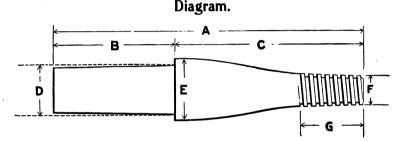
No. 7990.

#### Wood Pins.

THESE Pins are made from the best of selected stock, and have been designed particularly for use with the High Tension Insulators illustrated on the preceding pages. As indicated in the illustrations on the opposite page, they are furnished with two sizes of threaded ends, the standard being 1 inch, and the large size 13% inches in diameter at the upper end. These Pins can be furnished to order specially treated with paraffine, when desired. Special sizes not listed below can also be furnished on short notice.

As the line wires in high tension transmission systems are usually placed under considerable lateral tension, which in some instances tend to pull the pins out of the cross arms, it is recommended that a nail be driven into the cross arm and through the pin to secure the

latter in place.



			Dimensions in Inches.						Price	
Code Word.	No.	Stock.	A	В	С	D	E	F	G	per 1000.
Adrotatam. Adruam. Exorturus. Exossamus. Exoticus. Expalpamus. Expandimus. Expansus. Expansus. Expansurus. Expavendus. Expavendus.	1248 1249 7854 7855 7856 7857 7858 7859 7860 7861 7862 7863	Oak Locust Oak Locust Oak Locust Oak Locust Oak Locust Oak Locust Locust Oak	9 9 11½ 11½ 11½ 11½ 11½ 11½ 11½ 11½	4¼ 4¼ 4¼ 4¼ 4¼ 4¼ 4¼ 4¼ 4¼ 4¼ 4¼	4¾ 4¾ 7¼ 7¼ 7¼ 6½ 4¾ 4¾ 7¼	1½ 1½ 1½ 1½ 1¾ 1¾ 2 1½ 1½ 1½	1¾ 1¾ 2 2 2¼ 2¼ 2½ 1½ 1½ 2 2 2½	1 1 1 1 1 1 1 1 1 1,3% 1,3% 1,3% 1,3% 1,	2½ 2½ 2½ 2½ 2½ 2½ 2½ 2½ 2½ 2¼	\$ 16 00 25 00 34 75 66 80 38 95 66 80 41 75 83 50 16 70 22 25 34 75 66 80
Expertamus. Experturus.	7864	Oak	11½	41/4	71/4	13/4	21/4	13/8	21/4	38 95
Expetitus. Expiabamus. Expiamus. Expiaturus. Expictus. Expilandus.	7865 7866 7867 7868 7869 7870	Locust Oak Locust Oak	11½ 11½ 11½ 13 14½ 16	4 1/4 5 5 5 5 5 5	7½ 6½ 6½ 8 9½ 11	1¾ 2 2 2 2 2 2	2¼ 2½ 2½ 2¾ 3 3½	13/8 13/8 13/8 13/8 13/8 13/8	2¼ 2¼ 2¼ 2¼ 2¼ 2¼	66 80 41 75 83 50 55 65 97 55 118 30
Expilatus. Expingimus.	7989 7990	"	16½ 17	5 5	11½ 12	2 2 2	3¼ 3¼	1 13/8	2½ 2¼	139 15 139 15

For Feeder Wire Insulators and Pins see Section Five.

With All Wood Top.

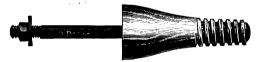
Standard Threaded End.



No. 7953.

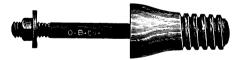


Nos. 7954-7955.



No. 7956.

Large Threaded End.



No. 7957.



No. 7958.



No. 7959.

#### With All Wood Top.

THESE Pins, which are illustrated on the opposite page, consist of a high carbon steel bolt fitted with a nut and washer and a paraffined wood top. They are strong and durable and will withstand considerable lateral strain. They also possess the advantage of requiring but a small hole in the cross arm, which adds considerably to the strength of the latter. As the illustrations on the opposite page indicate, they are furnished with two sizes of threaded ends, the standard being 1 inch, and the large size 136 inches in diameter at the upper end. As regularly supplied, the steel bolts are not galvanized, but can be so furnished to order.

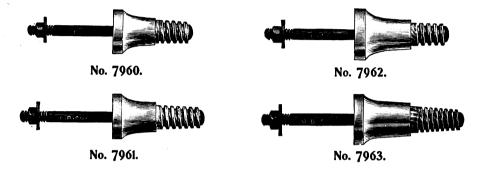
Diagram.

Code Word.	No.	Dimensions in Inches.							Price per	
		A	В	С	D	E	F	G	1000.	
Expinsurus.	7953	8½	5	3½	1/2	17/8	1	17/8	\$ 115 50	
Explanamus.	7954	9½	5	41/2	,7 <sub>6</sub>	17/8	1	2	110 00	
Explebamus.	7955	9½	5	41/2	1/2	17/8	1	2	121 00	
Explemus.	7956	10	4 3/4	51/4	1/2	21/4	1	2	165 00	
Explendus.	7957	9	5	4	5/8	21/4	13/8	2	165 00	
Expleremus.	7958	11	6½	4½	5/8	21/4	13/8	2	176 00	
Expleturus.	7959	10	4 3/4	51/4	1/2	21/4	13/8	2	176 00	

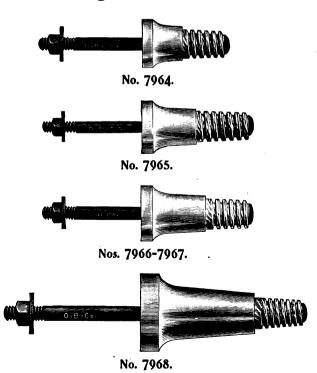
For Feeder Wire Insulators and Pins see Section Five.

### With Wood Top and Porcelain Base.

Standard Threaded End.

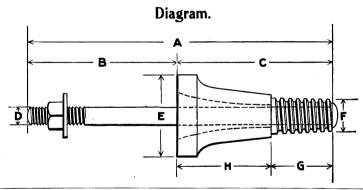


#### Large Threaded End.



#### With Wood Top and Porcelain Base.

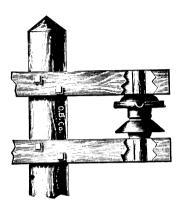
THESE Pins consist of a steel bolt with nut and washer and a paraffined wood top supported by a porcelain base. They are designed especially for high voltage work, as the porcelain base adds materially to the arcing distance of the insulator with which the Pins are used. The base also serves to prevent destructive arcing around the insulator, and the burning off of pins, cross arms, etc. By the use of these Pins with insulators in which the lower petticoat extends below the top of the base of the Pin, the most perfect combination for high voltage work is obtained. The wood top is treated with paraffine, and, being almost entirely contained in the insulator, is thoroughly protected from the weather, insects, etc. These Pins are furnished with two sizes of threaded ends, the standard being 1 inch, and the large size 13% inches in diameter at the upper end. As listed below, the steel bolts are not galvanized, but can be so furnished to order.



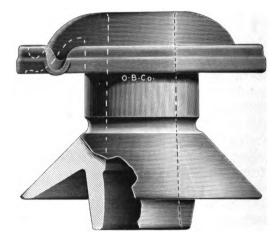
	No.	Dimensions in Inches.								Price	
Code Word.		A	В	с	D	Е	F	G	н	per 1000.	
Explevimus.	7960	8½	41/2	4	1/2	21/4	1	1¾	21/4	\$ 132 00	
Explicamus.	7961	91/2	47/8	4 5/8	1/2	21/4	1	23/8	24	132 00	
Explodimus.	7962	91/2	43/4	43/4	1/2 1/2 1/2	25%	1	13/4	3	148 50	
Exploramus.	7963	10½	47/8	5 1/8	1/2	25/8	1	25/8	3	165 00	
Explosurus.	7964	10	$5\frac{1}{2}$	41/2	5/8	2½	13/8	21/4	21/4	209 00	
Expolimus.	7965	11	51/4	53/4	5/8 1/2	25/8	13/8	23/4	3	176 00	
Exportamus.	7966	11	54	53/4	1/2	27/8	13/8	21/4	31/2	187 00	
Exposuimus.	7967	11	51/4	53/4	5/8	27/8	13/8	21/4	31/2	198 00	
Expoturus.	7968	16	71/4	834	5/8 5/8	4	13/8	23/4	6	396 00	

For Feeder Wire Insulators and Pins see Section Five.

#### High Tension Strain Insulator.



Strain Insulator in position.



Strain Insulator.

THE Strain Insulator here illustrated is intended for supporting High Tension Lines where considerable lateral strain must be provided for. It is especially suitable for use as a corner insulator or for dead-ending the line. The Insulator is supported between two cross arms, as illustrated above, by means of a cylindrical bar or pin passing through it into the cross arms. Two sizes are regularly furnished, as listed below.

	No. 8001.	No. 8002.
Maximum Working Voltage	20,000.	30,000.
Test Voltage	40,000.	60,000.
Diameter	$.7\frac{1}{2}$ inches.	$8\frac{1}{2}$ inches.
Height	63/4 "	8 ''

CODE WORD.	NO.								
Expreturus.	8001—S	train	Insulator,	20,000	Volts	3 <b></b>	.Each,	\$ 4	40
Exprimimus.	8002	"	"	30,000	"		. "	6	60



THE Third Rail Insulators illustrated and described on the succeeding pages have been placed on the market only after a most careful study and research into the requirements to be met, and the conditions under which insulators of this class are used, and also with a view to avoiding as much as possible the difficulties heretofore experienced with other types of these insulators. Special attention has been given to the design of them to secure the highest possible efficiency, the endeavor being to bring this efficiency to the same standard of excellence as has been attained in corresponding insulating devices used in overhead trolley construction.

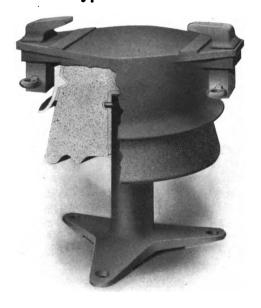
While a number of different styles and types of Insulators are shown, these do not include all the various forms we manufacture, for the reason that they can be varied ad libitum, both in the relative dimensions of the different parts, the character and form of the insulating materials, etc., etc. Each of these Insulators can be made to suit any ordinary section or weight of rail, and the various details of construction may be varied to meet almost any required specifications. The insulation employed is either vitrified glazed clay or reconstructed granite, both of which possess great mechanical strength and superior insulating qualities. Insulation in this form has the advantage of being practically indestructible, fireproof, and not affected by moisture or frost. The surface of both materials is covered with a smooth glaze, rendering them impervious to moisture, and serving to prevent the accumulation of dirt or dust on the surface of the Insulator, thereby reducing surface leakage to a minimum.

In preparing granite in the reconstructed form, it is first ground until it is reduced to the form of small-sized grains, after which it is put in a steel mould and subjected to great pressure. It is then placed in a kiln and heated sufficiently to cause the molecules of granite to melt and fuse together, thus forming one solid homogeneous mass.

Experience has demonstrated that Third Rail Insulators should have as few parts as possible, that the insulation should be very substantial, both in form and structure, and should also be protected from mechanical injury and moisture. An examination of the Insulators illustrated on the following pages will indicate that all of these points have been provided for in the several forms shown. It has also been demonstrated that the third rail ordinarily employed has sufficient weight of its own to hold it in place, so that it is unnecessary to secure it rigidly to the insulators. As it is often desirable to anchor the third rail at various points along the line, the use of some form of Anchor Insulator is required, and for this purpose either the Type E or F Insulator illustrated on pages 406 and 407 is recommended.

Patented.

Type A—Form 1.

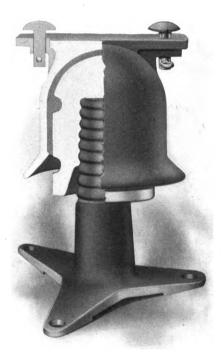


THIS consists of a malleable iron standard rigidly secured to an insulating body of reconstructed granite of proper size and design to support the third rail with safety, and also prevent leakage of the current over its exterior. A cap casting of malleable iron is firmly cemented to the top of the insulating body, and serves to support the third rail. The rail is held in place by means of lugs on each side of the cap casting, which, while holding the former in proper horizontal alignment, permit a sufficient vertical play and motion to obviate the trouble arising from the breaking of the insulators which has occurred in the past from the rail being secured too rigidly to the insulator.

CODE WORD. NO.

Febriendam. 3042—Third Rail Insulator........................Each, \$ 1 40

#### Type A—Form 2.



In the Insulator here shown the insulating medium consists of highly vitrified porcelain, which is cemented to an outer shell casting to which the third rail is secured by means of lugs, as illustrated. The insulating body is threaded to fit a malleable iron standard, which serves to support the Insulator.

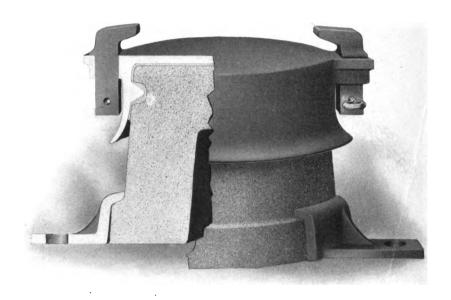
This Insulator is designed particularly for use in mining and coke oven installations, etc., where the third rail employed does not weigh over 25 pounds per yard.

CODE WORD. NO.

Expugnamus. 8003—Third Rail Insulator..... Each, \$ 0 85

Patented.

#### Type B—Form 1.



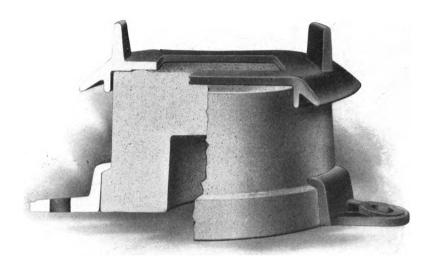
FOR the insulating body in this Insulator a circular block of reconstructed granite is provided, upon the top of which a malleable iron cap casting is secured by being cemented in place. The third rail is attached to the Insulator by means of movable lugs similar to those of the Type A—Form 1 Insulator described on page 400. The Insulator is secured to the rail tie by two malleable iron clamping pieces, each of which are provided with a flange at the top to fit a corresponding flange on the insulator body. Lag screws or bolts are employed to secure the clamping pieces to the rail tie.

CODE WORD. NO.

Expulsamus. 8004—Third Rail Insulator........................ Each, \$ 1 10

Patent Applied For.

#### Type B—Form 2.

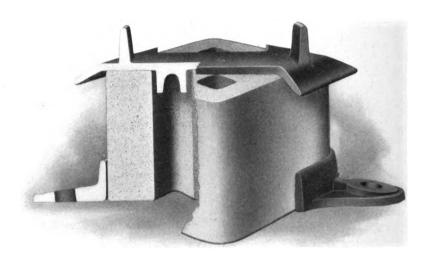


THE Type B—Form 2 Insulator illustrated above consists of a circular block of vitrified glazed clay, which supports the third rail through the medium of a malleable iron cap casting, provided with straight lugs, as shown. The cap fits loosely over the top of the clay block, being held to the latter by ribs at each side, which project over the side of the block. Malleable iron clamping pieces are provided for securing the Insulator to the rail tie.

CODE WORD. NO.

Expulsurus. 8005—Third Rail Insulator........................ Each, \$ 1 00

#### Type C—Form 1.

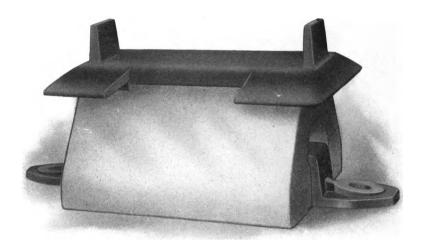


In the Type C Insulator illustrated above the insulating medium consists of a hollow square block of vitrified glazed clay, which supports a malleable iron cap casting upon which the third rail rests. The cap casting fits loosely over the top of the clay block, and is held to the latter by means of lugs which project from the bottom of the casting into corresponding holes in the block. The Insulator proper rests directly upon the rail tie, or other support, and is held in place by means of malleable iron castings, as shown in the above illustration.

CODE WORD. NO.

Patent Applied For.

#### Type D—Form 1.



THE insulating medium employed in this Insulator is a hollow rectangular block of vitrified glazed clay, which rests directly on the rail tie or other support, and is secured to the latter by means of malleable iron clamping pieces at each end, as indicated in the above illustration. A cap casting of malleable iron fits loosely over the top of the clay block, and is provided with straight lugs for holding the third rail in position. This casting has an outer skirt for draining off moisture, thus preventing it from reaching the insulation.

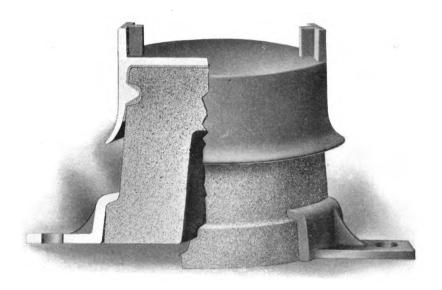
CODE WORD. NO.

Expurgamus, 8007—Third Rail Insulator..... Each, \$ 0 85

Patent Applied For.

Type E—Form 1.

Anchor Type.



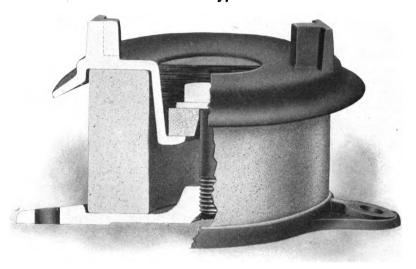
THE Insulator shown above resembles in general form the Type B—Form 1 illustrated on page 402, and differs from the latter only in the manner in which the third rail is secured in place. This form of Insulator is intended for use as an Anchor Insulator, to be placed at several points along the line to prevent horizontal motion or travel of the rail. The cap casting is provided with straight lugs having ribs which fit into corresponding notches cut in the base of the third rail.

CODE WORD. NO.

Patent Applied For.

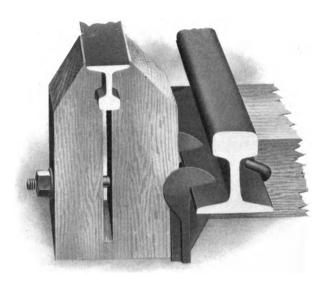
Type F—Form 1.

Anchor Type.



THIS is designed for use as an Anchor Insulator to prevent horizontal motion or travel of the third or feeder rail. It consists of a cap and base casting which are clamped together by means of a machine bolt, and insulated from each other by a hollow cylinder of vitrified glazed clay and a thick fibre washer which surrounds the upper end of the bolt. The cavity in the top of the cap casting, also the depression in the base in which the clay cylinder rests, is filled with a weather-proof compound to prevent moisture, etc. from reaching the interior of the Insulator. The third rail is anchored horizontally to the Insulator by means of straight lugs on the cap casting, which fit into corresponding notches cut in the base of the rail.

#### Type G—Form 1.



THE practical design of this Insulator will permit its use under many conditions, but it is particularly recommended for mining and coke oven installations operated by electricity. The ball of the third or contact rail is clamped in grooves cut in the upper part of two wooden blocks and is held rigidly in place between them, leaving, as the illustration shows, the bottom of the rail flange in an inverted position, upon which the contact shoe bears. The two wooden blocks are specially treated, so as to exclude all moisture, thus affording high insulating qualities. The Insulator is attached directly and securely to the flange of the track rail by means of the hooked bolt and guide castings as shown, so that the contact and track rails are always in alignment with each other. The bolt also serves to clamp the two wood blocks together on the contact rail.

CODE WORD. NO.

Objurandam. 4487—Third Rail Insulator......Each, \$ 2 75

#### Third Rail Guard.

Patent Applied For.



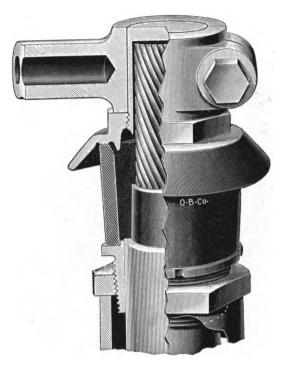
THE Third Rail Guard illustrated above is designed for protecting the third or contact rail from snow, sleet, etc., as well as preventing accidents caused by persons coming into contact with the third rail. It combines substantial construction with lightness in weight and low first cost. Being fastened to the rail instead of the rail tie, the Guard has the same motion as the rail, and the liability of getting out of alignment with the latter is reduced to a minimum. As the above illustration shows, the Guard is securely attached to the base of the rail by means of a forked casting and hooked bolt.

CODE WORD. NO.

Extraturus. 8010—Rail Guard Supports...... Each, \$ 1 25

#### Cable Terminal Insulator.

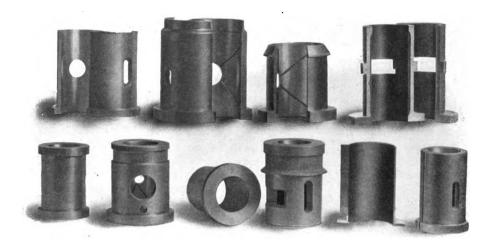
Patent Applied For.



THIS device is designed for use in making connections between the third or feeder rail and underground cables, its use being particularly indicated in switching yards and at grade crossings, where the third rail terminates and the circuit is completed by means of an underground cable. The construction of this Insulator is such that it can be assembled on the cable after the latter has been placed in position. There is no danger of short circuits either externally or internally, and the Insulator is so arranged that the circuit can be readily opened at the terminal by removing a single bolt in the top clamping piece. The terminal proper is insulated from the iron pipe casing by means of a sleeve of Dirigo, the interior of which is filled with a weather-proof compound. For connecting an underground cable with the third rail through the medium of the Terminal Insulator, the "All Wire" Bond Terminals shown on page 224 are particularly recommended.

CODE WORD.	NO.	
Extravimus.	8011—Cable Terminal Insulator Each, \$ 5	3 50
	8043—Weather-proof Compound Per lb	





THE superiority of the Genuine Bell Metal Motor Bearings over all others results from two causes, one being the peculiar quality of the metal used in their composition, the other the perfect manner in which the castings are machined and finished. The selection of the various materials which enter into their make-up, and the proportions used. were only arrived at after an extended and thorough investigation of what was most suitable for this particular purpose, the result being that a metal was secured which combines great wearing qualities with a minimum amount of friction. Smoothness in finish and accuracy of fit for the Bearings are obtained by the employment of skilled mechanics and the use of special machines and tools adapted for this class of work. No labor is spared to make them perfect in every respect, for it is through careful attention to the details of their manufacture and the combination of the various features mentioned, that the GENUINE Bell Metal Bearings have proved to be the most economical and satisfactory ones to use. As a positive means of distinguishing them from those manufactured by other companies, a cut of a bell on which appear the letters "O. B. Co." has been adopted as a trademark, and an outlined reproduction of this is stamped into the metal of each This mark also serves as an absolute guarantee of the quality of the Bearings, as any which do not give entire satisfaction will be replaced.



### Armature Bearings.

#### Commutator End.

CODE WORD.	NO.			
Calvescam.	1440—T. H. F. 20	Each,	\$ 3	80
Calyptram.	1442— " F. 30	"	4	85
Cambiam.	1443— " F. 30 A	"	7	25
Cambiam.	1443— " S. R. F. 30	"	7	25
Cambiveram.	1445— " S. R. G. 30	"	7	20
Caminabam.	1446— " W. P. 30	"	1	95
Caminabam.	1446— " W. P. 50	"	1	95
Can des cam.	1449—Edison or Sprague No. 6	"	4	85
Candicabam.	1866— " No. 14	"	12	05
Camptaulam.	1448—G. E. 800	"	7	00
Canceratam.	1893— " 1000	"	9	25
Candebam.	1865— " 1200	66	7	30
Deripueram.	<b>2275</b> — " 52	"	10	90
Baccalibus.	6529— " 53	"	4	90
Deripueram.	2275— " 54	"	10	90
Derisam.	2276— " 57	"	14	05
Derivabam.	2277— " 58	"	14	55
Comicus.	6904— " 60	"	10	40
Comitandus.	6905— " 62	"	9	15
Comitatus.	6906— " 66	"	9	20
Comitemus.	6907— " 67	"	10	25
Comitiamus.	6908— " 73	"	9	80
Candificam.	1451—Westinghouse No. 3	"	9	35
Candueram.	1452— " 12	"	10	20
Caneam.	1868— " 12 A	"	13	60
Derogabam.	2278— "	"	15	45
Deruam.	2279— " 49	"	13	90
Comitivus.	6909— "	"	17	20
Commanitus.	6910—Baldwin-Westinghouse No. 57	"	12	80
Commanitus.	6910— "	"	12	80
Commeamus.	6911— " " 79	"	12	25
Obmussabam.	4512—Steel Motor No. 34	"	15	40

The prices given above refer in each case to a Single Complete Bearing.

Special sizes and styles of Bearings made to specifications.





### Armature Bearings.

### Gear End.

CODE WORD.	NO.		
Can thar iam.	1453—T. H. F. 20	Each,	\$ 4 15
Canturiam.	1455— '' F. 30	"	5 55
Caperandam.	1456— " F. 30 A	"	8 45
Caperandam.	1456— " S. R. F. 30	"	8 45
Capessam.	1458— " S. R. G. 30	"	7 70
Capiam.	1459— " W. P. 30	"	4 70
Capiam.	1459— " W. P. 50		4 70
Candescam.	1449—Edison or Sprague No. 6		4 85
Candicabam.	1866— " No. 14		12 05
Capitariam.	1461—G. E. 800	. "	7 70
Cappadocam.	1895— " 1000	. "	14 05
Capreolam.	1872— " 1200	. "	10 00
Deruebam.	2280— " 52	. "	12 85
Attriturus.	6486— " 53	. "	8 20
Deruebam.	2280— " 54	. "	12 95
Deruptam.	2281— " 57	. "	19 00
Desacrabam.	2282 " 58	. "	18 40
Commensus.	6912— " 60	. "	16 00
Commetitus.	6913— " 62	. "	11 35
Comminatus.	6914— " 66	. "	14 00
Commisimus.	6915— " 67	. "	15 30
Commixtus.	6916— " 73	. "	13 50
Capulandam.	1464—Westinghouse No. 3	. "	7 45
Capulatam.	1465— " 12	. "	7 75
Caneam.	1868— " " 12 A	. "	13 60
Derogabam.	2278— " " 38 B	. "	15 45
Desaltabam.	2284— " " 49		16 05
Commolitus.	6917— "	. "	21 10
Commoratus.	6918—Baldwin-Westinghouse No. 57	. "	12 35
Commoratus.	6918— " " 74	. "	12 35
Commotibus.	6919— " " 79	. "	12 35
Obnoxia bam.	4517 - Steel Motor No. 34		16 75

The prices given above refer in each case to a Single Complete Bearing.

Bearings not included in this list furnished on short notice.



### Genuine Bell Metal Motor Bearings.



### Intermediate Bearings.

CODE WORD. Carinatam. Carotam. Carpebam. Carpseram.	NO. 1466—T. H. F. 20	Each,	\$ 4 40 6 10 8 85 5 60
	Axle Bearings.		
CODE WORD.	NO.		
Carueram.	1473—T. H. F. 20	Each,	\$800
Caryam.	1474— " F. 30	"	10 60
Obnubam.	4518— " S. R. F. 30	"	11 90
Obnubam.	4518— " S. R. G. 30	4.6	11 90
Casaturam.	1477— "W. P. 30, 3\% inch axle	"	13 55
Casaveram.	1478— " W. P. 30, 3¾ " "	4.6	10 75
Aucemus.	6489— " W. P. 50, 31/4" "	"	14 55
Casaturam.	1477— " W. P. 50, 33/8 " "	4.6	13 55
Ballamus.	6536— "W. P. 50, 3½" "	"	12 75
Consedimus.	6972— " W. P. 50, 35% " "	66	11 90
Casaveram.	1478- " W. P. 50, 3¾ " "	"	10 75
Causariam.	1486—Edison or Sprague No. 6	"	7 70
Causativam.	1882— " No. 14, 3¼ inch axle	"	12 75
Obnubebam.	4519—G. E. 800, 35% " "	"	8 70
Cataractam.	1879— " 800, 3¾ " "	"	8 00
Auctificus.	6492— " 800, 4 " "	4.6	5 65
Catenulam.	1899— " 1000, 3¾ " "	"	18 15
Cathedram.	1920— " 1000, 4 " "	"	16 70
Obnuntiam.	4520— " 1000, 4¼ " "	"	14 60
Catomidiam.	1881— " 1200, 3¾ " "	"	16 35
Caudeam.	1922— " 1200, 4 " "	66	14 30
Ballavimus.	6539— " 1200, 4¼ " "	"	11 50
Catenulam.	1899— " 52, 3¾ " "	"	18 15
Cathedram.	1920— " 52, 4 " "	"	16 70
Obnuntiam.	4520— " 52, 4¼ " "	"	14 60

The prices given above refer in each case to a Single Complete Bearing.

In ordering Axle Bearings state the diameter of the axle with which they are to be used.





### Axle Bearings.

CODE WORD.	NO.						
Beamus.	6559—G. E. 53,	4	inch	axle	 Each,	\$ 10	0 35
Beatificus.	6562 " 53,	41/4	"	"	 44	;	8 75
Cathedram.	1920— '' 54,	4	"	"	 "	10	6 70
Obnuntiam.	4520— " 54,	41/4	"	"	 "	14	4 60
Desecueram.	2292— '' 57,	4	"	"	 "	19	9 30
Obominatam.	4526— " 57,	41/4	"	"	 "	10	6 95
Obortam.	4527— " 57,	4 1/2	"	"	 "	14	4 35
Catenulam.	1899— " 58,	3¾	"	"	 44	18	8 <b>15</b>
Cathedram.	1920— " 58,	4	66	"	 "	16	6 70
Obnuntiam.	4520— '' 58,	41/4	"	"	 "	14	4 60
Catenulam.	1899— " 60,	3¾	"	"	 "	18	8 15
Cathedram.	1920— " 60,	4	"	"	 4.6	16	6 70
Obnuntiam.	4520— " 60,	4 1/4	66	"	 "	14	4 60
Catenulam.	1899— " 62,	3¾	"	"	 "	18	8 <b>15</b>
Cathedram.	1920— " 62,	4	"	"	 "	16	3 70
Obnuntiam.	4520— '' 62,	41/4	"	"	 "	14	4 60
Comparitus.	6923— '' 66,	6	"	"	 "	3.	1 95
Compectus.	6924— " 66,	61/2	"	"	 "	22	2 35
Compedicus.	6925— '' 67,	3¾	"	"	 "	2	1 55
Compegimus.	6926— " 67,	4	"	"	 "	19	9 75
Complemus.	6927— '' 67,	41/4	"	"	 "	17	7 15
Emeteremus.	7803— " 67,	$4\frac{1}{2}$	"	"	 "	18	5 00
Compluimus.	6928— " 73,	4 3/4	"	"	 	26	30
Componimus.	6929— '' 73,	5	"	"	 "	22	2 50
Comptibus.	6930— '' 73,	51/4	"	"	 "	18	<b>95</b>
Cecideram.	1923—Westinghouse No.	3, 31/4	"	"	 "	1:	1 85
Cedendam.	1488 " "	3, 33/8	"	"	 "	13	1 30
Obrepam.	4529— '' ''	3, 31/2	"	"	 "	1	1 00
Obrepebam.	4530— " "	3, 3%	"	"	 6.6	10	70
Cedream.	1884— " "	3, 3¾	"	"	 "	10	0 40
Cedrinam.	1489— " " 1	2, 33/8	"	"	 "	17	7 70

The prices given above refer in each case to a Single Complete Bearing.

In ordering Axle Bearings state the diameter of the axle with which they are to be used.





### Axle Bearings.

CODE WORD.	NO.									
Obrepturam.		Vestingho	use No.	12.	31/2	inch	axle	e I	Each.	\$ 17 25
Celabam.	1924—	"	"	12,	35%	66	66		"	16 70
Celaturam.	1490	"	66	12,	3¾	"	"		"	15 80
Celaveram.	1925	46	"	12,	4	"	"		"	13 75
Cedrinam.	1489—	44	44	12 A.	33/8	"	"	••••	"	17 70
Obrepturam.	4532	"	"	12 A,	3½	"	"		"	17 25
Celabam.	1924	"	"	12 A,	35%	"	"		"	16 70
Celaturam.	1490-	44	"	12 A,	31/4	"	"		"	15 80
Celaveram.	1925	"	"	12 A,	4	"	"		"	13 75
Desidendam.	2299—	46	"	38 B,	3¾	"	"	••••	"	12 65
Designabam.	2300	"	44	38 B,	4	"	"	• • • • •	"	13 75
Obrigescam.	4535	"	"	38 B,	41/4	"	"	• • • • •	"	11 25
Desidendam.	2299	46	"	49.	3¾	"	"		"	12 65
Designabam.	2300—	44	"	49,	4	"	"		"	13 75
Obrigescam.	4535	"	"	49.	41/4	"	"	• • • • •	"	11 25
Comptulus.	6931—	44	"	56,	4	"	"	• • • • •	"	27 05
Conatibus.	6932—	"	"	56,	41/2	"	"		"	22 40
Concactus.	6933	"	"	56,	5 '	"	"		"	17 40
Concacemus.		aldwin-W	/estingh	,	-	"	"	••••	"	11 90
Concedimus.	6935	66	"	"	57, 4	"	"		"	12 10
Concelamus.	6936—	"	44	44	57. 41/4	"	"		"	7 90
Concacemus.	6934—	"	"	66	74, 334	"	"		"	11 90
Concedimus.	6935	"	44	"	74, 4	"	"		"	12 10
Concelamus.	6936—	"	"	"	74, 41/4	"	"		"	7 90
Conchatus.	6937—	"	46	"	79, 4	"	"		"	10 95
Concimus.	6938—	"	"	"	79, 41/4	"	"		46	9 00
Obserandam.	4546—S	teel Moto	r No. 34		4	"	"		"	29 40
Obseratam.	4547—		" 34	•	41/4	"	46		"	26 30
Obserbabam.	4548	"	" 34		4 1/2	"	"	• • • • •	"	22 95

The prices given above refer in each case to a Single Complete Bearing.

In ordering Axle Bearings state the diameter of the axle with which they are to be used.





THE increasing demand for Babbitted Motor Bearings, due to their relatively low selling price, has led us to place on the market a very superior grade of them, which we can unhesitatingly recommend as equal, if not superior to any other bearings of this kind which can be obtained.

These Bearings consist of carefully machined iron shells lined with *Genuine Babbitt Metal*, the ingredients of which consist of pure copper, block tin and antimony, correctly proportioned. The superior wearing qualities of this as a Bearing metal are so generally known that anything which might be said in its behalf would be almost superfluous. All finished parts of these Bearings, including the bore of them, are carefully machined to size, insuring not only a perfect fit when placed in the motor, but also a smooth bearing surface for the shaft or axle used in connection with them.

In addition to furnishing these Bearings in their complete form, as listed on the following pages, we are also prepared to rebabbitt old shells on short notice. We are likewise able to furnish the Shells unbabbitted, where for any reason our customers prefer to do the babbitting themselves.

### Armature Bearings.

#### Commutator End.

CODE WORD.	NO.		
Obsideam.	4549—Edison No. 14	Each,	\$ 8 90
Desiste bam.	2685—G. E. 800	"	4 80
Desituram.	2686— " 1000	"	7 40
De solabam.	2687— " 1200	"	6 50
Desorbe bam.	2688 " 52	"	7 00
Concinimus.	6939— " 53	"	4 55
Desorbe bam.	2688— " 54	"	7 00
Desperabam.	2689— " 57	"	8 55
Despernam.	2690— " 58	"	8 80
Concitamus.	6940— " 60	"	6 20
Concitibus.	6941— " 62	"	5 95
Conclausus.	6942— " 67	"	6 95
Despexeram.	2691—Westinghouse No. 3	"	6 10
Despicatam.	2692— " " 12	"	6 82
Desputam.	2693— " 12 A	"	9 25
Destertam.	2695— " " 38 B	"	8 00
Desticabam.	2696— " " 49	"	8 70
Concuratus.	6943— " 56	"	8 70
Concussus.	6944— " " 68	"	8 95
Condendus.	6945—Baldwin-Westinghouse No. 57	"	7 40
Condendus.	6945— " " 74	"	7 40
Condicimus.	6946— " " 79	"	7 55
Obsiste bam.	4554—Steel Motor No. 34	٠,,	8 25

The prices given above refer in each case to a Single Complete Bearing.

Bearings not included in this list furnished on short notice.



### Armature Bearings.

#### Gear End.

CODE WORD.	NO.			
Obsideam.	4549—Edison No. 14 E	ach,	\$8	90
Destinatam.	2697—G. E. 800	"	5	55
Destituam.	2698— " 1000	"	9	40
Destructam.	2699— " 1200	"	8	00
Desucturam.	2700— " 52	"	8	00
Condignus.	6947— " 53	"	5	40
Desucturam.	2700— " 54	"	8	00
Desudandam.	2701— "     57	"	10	45
Desudas cam.	2702— " 58	"	9	50
Conditurus.	6948— " 60	"	7	50
Condoctus.	6949— " 62	"	6	95
Condolitus.	6950— " 67	"	8	00
Desudatam.	2703—Westinghouse No. 3	"	5	95
Desueveram.	2704— " " 12	"	6	00
Desputam.	2693— " " 12 A	"	9	25
Destertam.	2695— " " 38 B	"	8	00
Desume bam.	2708— " " 49	"	8	85
Condonatus.	6951— " 56	"	11	95
Condonemus.	6952— "	"	10	95
Condylus.	6953—Baldwin-Westinghouse No. 57	"	5	50
Condylus.	6953— " " 74	"	5	50
Confecimus.	6954— " " 79	"	5	35
Obsolutam.	4560—Steel Motor No. 34	"	8	85

The prices given above refer in each case to a Single Complete Bearing.

Special sizes and styles of Bearings made to specifications.



### Axle Bearings.

CODE WORD.	NO.							
Obsonabam.	4561—Edison No	o. 14, 3¼	inch	axle.		Each	, \$ 8	60
Detentatam.	2709—G. E. 800,	33/8	"	".		"	7	55
Confictus.	6955— " 800,	35%	"	".		"	7	20
Deterrebam.	2713— '' 1000,	3¾	"	"			11	30
Detersuram.	2714— " 1000,	. 4	"	".		"	11	30
Obsorbitam.	4563— " 1000,	4 1/4	"	".			11	20
Detinebam.	2717— " 1200,	3¾	"	".			10	90
Confidemus.	6956— " 1200,	, 4	"	".			10	15
Deterrebam.	2713— " 52,	334	"	".			11	30
Detersuram.	2714— " 52,	4	"	".		"	11	30
Obsorbitam.	4563 " 52,	41/4	"	".			11	20
Confinibus.	6957— '' 53,	. 4	"	".		"	8	10
Detersuram.	2714— '' 54,	, 4	"	".		"	11	30
Detorritam.	2726 " 57,	. 4	"	".		"	13	70
Obstipatam.	4568— " 57,	4 1/4	"	".		"	13	50
Deterrebam.	2713— '' 58,	334	"	".			8	20
Detersuram.	2714— " 58,	. 4	"	".		"	11	30
Obsorbitam.	4563 '' 58,	4 1/4	"	".		"	11	20
Deterrebam.	2713— " 60,	334	"	".	• • • • • • • • • • • • • • • • • • • •	"	11	30
Detersuram.	2714— " 60,	4	"	".	• • • • · · • • • • · · · · · · · · · ·	"	11	30
Deterrebam.	2713— " 62,	3¾	"	".			11	20
Detersuram.	2714— " 62,	. 4	"	".	• • • • • • • • • • • • • • • • • • • •		8	20
Obsorbitam.	4563 " 62,	41/4	"	".		"	11	30
Confodimus.	6961— '' 66,	, 6	"	".	• • • • • • • • • • • • • • • • • • • •	"	18	65
Confovemus.	6962— " 67,	33/4	"	".		"	11	30
Confragus.	6963— " 67,	, 4	"	".		"	11	15
Congelatus.	6964— " 67,	414		".	· • • • • • • • • • • • • • • • • • • •	"	11	20
Emicandus	7804 " 67	11/	66	"		"		00

The prices given above refer in each case to a Single Complete Bearing.

In ordering Axle Bearings state the diameter of the axle with which they are to be used.



### Axle Bearings.

CODE WORD.	NO.										
Detriveram.	2731—Wes	tinghous	e No.	3,	31/4	inch	axl	eEa	ich,	\$8	20
Detrudam.	2732-	"	44	3,	33/8	"	"		"	8	20
Obstruam.	4571—	"	"	3,	$3\frac{1}{2}$	"	"		"	8	20
Obstructam.	4572	"	"	3,	35/8	"	"		"	8	15
Detruseram.	2734—	"	"	12,	33/8	"	"		"	10	10
Obstrue bam.	4573	"	"	12,	3½	"	"		"	10	10
Detumes cam.	2735—	"	"	12,	3 1/8	"	"		"	10	00
Detunde bam.	<b>2736</b> —	"	"	12,	3¾	"	"		"	10	00
Deturbabam.	2737—	"	"	12,	4	"	"		"	9	95
Detruseram.	2734	"	"	12 A	, 33/8	"	"		"	10	10
Obstruebam.	4573—	"	"	12 A	, 3½	"	"		"	10	10
Detumes cam.	2735—	"	"	12 A	, 35%	"	"		"	10	00
Detunde bam.	2736—	"	"	12 A	, 3¾	64	"		"	10	00
Deturbabam.	2737	"	"	12 A	, 4 ·	"	"		"	9	95
Deveneram.	2748	"	"	38 B	, 3¾	"	"		"	10	00
Deveniebam.	2749—	"	"	38 B	, 4	"	"		"	9	95
Deveneram.	2748—	"	"	49,	3¾	"	"		"	10	00
Deveniebam.	2749	44	"	49,	4	"	"		"	9	90
Congelemus.	6965	"	"	56,	4	"	"		"	9	20
Congruimus.	6966	"	"	56,	4 ½	"	"		"	12	10
Connisurus.	6967—	"	"	68,	4	"	"		"	10	<b>2</b> 5
Connivimus.	6968—	"	"	68,	41/4	"	"		"	10	<b>2</b> 5
Connixus.	6969—	"	"	68,	4 ½	"	"		"	10	<b>15</b>
Obtendabam.	4581—Steel	Motor	No.	34,	4	"	"		"	13	90
Consaturus.	6970—"	"	"	34,	41/4	"	"		"	13	05
Consedatus.	6971—"	44	"	34,	4½	"	"		"	13	00

The prices given above refer in each case to a Single Complete Bearing.

In ordering Axle Bearings state the diameter of the axle with which they are to be used.



### Babbitt Metal.

### For Motor and Truck Bearings.



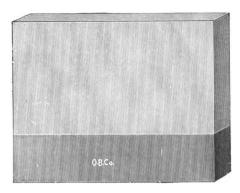
THERE are now on the market for Motor and Truck Bearings a number of different grades and brands of Babbitt Metal which vary as greatly in quality as they do in price. The majority of them are not even suitable for electric railway service, and but few are economical to use, as their quality is so inferior that the frequent renewals required by the short service which they give, offset by far their relatively low selling price. In offering our two special brands, viz., Genuine and Motor Babbitts, we have selected two bearing metals which, from our extensive experience as manufacturers, we can recommend unreservedly.

The Genuine Babbitt Metal, as its name implies, is made to the Original and Genuine Babbitt formula, and nothing superior in this line can be obtained, as it is absolutely the best frictionless metal of this nature that it is practical, with the present state of the arts, to produce. Its first cost to the user is higher than the imitation mixtures, but the ultimate cost is less, due to the increased length of service and better all around satisfaction which it gives.

The Motor Babbitt is cheaper in price than the Genuine, as reference to the price list of the two will show, but its ingredients are carefully selected and so proportioned as to make it a bearing metal which will give all around satisfaction, and may be used with the best results under very severe conditions in service. It is intended for use where a strictly first class, but not a Genuine Babbitt is required, and is guaranteed to be fully equal to the best of the other makes of commercial babbitts ordinarily sold for electric railway service.

CODE WORD.	NO.							
Obterendam.	4582—Genuine	Babbitt	Metal	l	Pe	r Pound,	\$ 0	75
Obtexueram.	4583—Motor	"	"		"	44		50

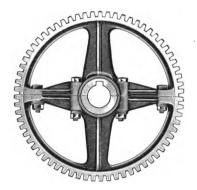




THESE Brushes are made of a high grade of carbon of very fine texture, and will not split or break under the most severe conditions. Any size or style of Brush not included in the following list can be furnished promptly.

CODE WORD.	NO.
Amicitiam.	1496-W. P. 30
Amiseram.	1497— " 50 $2\frac{1}{4} \times 2\frac{7}{8} \times \frac{1}{2}$ " " " 42 50
Omnivolam.	4698—T. H. F. 30, S. R. G. 30, 1¾ x2¼ x½ " " " 36 00
Amittebam.	1500—Edison No. 6
Amorificam.	1502- " " $14$
Amittam.	1499—G. E. 800
Dimoveam.	2815- " $1000$
Exputemus.	8012— " 1000, large2½ x2¾ x½ " " " 42 50
Amittam.	1499— " 1200
Dirumpam.	$2819-$ " $52$ " " $36\ 00$
Exquisitus.	8013— " 52, large2½ x2½ x½ " " " 42 50
Exrogamus.	8014— " 53 $2\frac{1}{4}$ x $1\frac{1}{2}$ x $\frac{5}{8}$ " " " 40 00
Exsatiatus.	8015— " 53, large2½ x3 x 5% " " " 57 50
Diruperam.	2820- " $57$
Dimoveam.	2815— " 58 $2\frac{1}{2}x1\frac{3}{2}x\frac{1}{2}$ " " " 36 00
Exquisitus.	8013— " 62 $2\frac{1}{4}$ x2 $\frac{1}{2}$ x $\frac{1}{2}$ " " " 42 50
On caturam.	4700- " $67$
Amphoram.	1505—West. Nos. 3, 12, 12 A, 2¾x2¾x½ " " 42 50
Amphoram.	1505— " 12 B, $12 \text{ C} \dots 2\frac{3}{4} \times 2\frac{3}{8} \times \frac{1}{2}$ " " 42 50
Dirupturam.	2821— " 38, 38 A $2\frac{1}{2}x\frac{1}{2}x\frac{1}{2}$ " " 40 00
Dirupturam.	2821— " 38 B, 49, 68, 2¾x1½x½ " " 40 00
Extabuimus.	8016— " 56, 62, 762 $\frac{3}{4}$ x2 x $\frac{1}{2}$ " " 42 50
Opacaveram.	4708—Steel Motor No. 342½x2 x½ " " 42 50





FOR Gears we use cold blast charcoal and open hearth steel of a high carbon, and guaranteed evenness of temper and freedom from flaws. Our Steel Pinions are made from hammered Bessemer Steel, extra hard and very tough. The Rawhide Pinions are cut from the best of selected stock.

### Armature Pinions.

Code Word.	No.	Type of Motor.	Specifications.	Steel.	Rawhide.
Aliculum.	1375	T. H. F. 20		\$ 3 40	\$ 7 60
A liena bam.	1376	" F. 30		4 50	10 50
Aliquipiam.	1377	" F. 40		5 10	12 60
Allambebam.	1379	" W. P. 30	14 Teeth	3 80	10 50
Allambebam.	1379	" W. P. 50	14 "	3 80	10 50
Allaudabam.	1382	Edison No. 6	4 inch Face	3 50	8 20
Devomueram.	2762	" " 14	15 Teeth	6 80	
Obtigendam.	4584	G. E. 800	14 "	3 80	10 50
Obtigeram.	4585	** 800	17 "	5 50	13 98
Obtingam.	4586	" 1000	17 "	5 50	13 98
Extendimus.	8017	" 1000	18 "	6 10	17 75
Obtingebam.	4587	" 1000	22 "	9 00	30 24
Deviaturam.	2755	" 1200	17 "	6 00	15 20
Devicerám.	2757	" 52	14 "	3 80	10 50
Obtorpebam.	4590	" 53	15 "	4 60	16 98
Extensurus.	8018	" 54	14 "	3 80	10 50

In ordering Pinions state diameter of bore required and whether straight or taper.

In telegraphing, where reference is desired to be made to the style of Pinions, use code word *Devomam* for "Steel" and *Devomebam* for "Rawhide," as the case may be, placing it after the regular code word designating the Type of Motor.



### Armature Pinions.

Code Word.	No.	Type of Motor.	Specifications.	Steel.	Rawhide.
Obtorqueam.	4591	G. E. 57	16 Teeth	\$ 6 50	\$ 20 14
Obtorturam.	4593	" 57	19 ''	8 60	26 35
Obtrahebam.	4595	" 57	26 "	14 30	45 78
Devigescam.	2758	" 57	28 ''	15 10	50 22
Devocabam.	2759	" 57	33''	22 20	67 80
Obtraxeram.	4596	" 58	15 "	4 40	16 98
Obtritam.	4597	" 58	17 "	5 50	13 98
Extentamus.	8019	" 58	19 ''	7 65	23 84
Obtriveram.	4598	" 58	22 "	9 00	30 24
Extentibus.	8020	" 62	14 "	3 80	10 50
Extenuatus.	8021	" 67	15 "	4 40	16 98
Obtrudam.	4599	" 67	17 "	5 50	13 98
Obtrudebam.	4600	" 67	22 "	9 00	30 24
Allegandam.	1385	West, No. 3	18 "	6 60	17 49
Allegatam.	1386	" " 12	14 "	4 30	11 50
Allegatam.	1386	" " 12 A	14 "	4 30	11 50
Obtuderam.	4601	" " 38	14 "	4 30	11 50
Dexteram.	2766	" " 38	18 ''	6 60	17 49
Diabetam.	2767	" " 38	24 ''	11 10	39 27
Diabetam.	2767	" " 38 B	24 ''	11 10	39 27
Obtunsuram.	4602	" " 49	14 "	4 30	11 50
Obturbabam.	4603	" " 49	16 "	5 60	20 14
Obtusam.	4604	" " 56	14 "	4 30	11 50
Obuncam.	4605	" " 56	18 ''	6 60	17 49
Obuncatam.	4606	" " 56	24 ''	11 10	39 27
Extenuemus.	8022	" " 68	14 "	4 30	11 50
Exterendus.	8023	Walker 4 A	14 ''	3 80	10 50
Extergemus.	8024	" 3-N-800	14 "	3 60	10 50
Obusturam.	4608	Steel Motor No. 34	21 "	10 30	31 60
Extexturus.	8025	" 34	25 "	12 50	41 40

### Intermediate Pinions.

Code Word.	No.	Type of Motor.	Specifications.	Steel.	Rawhide.
Allidebam.	1390	T. H. F. 20	4 inch Face	\$ 3 70	\$ 9 20
Alligabam.	1391	" F. 30		5 10	12 60
Allinendam.	1392	" F. 40		7 10	15 00
Alliseram.	1393	Edison No. 6		5 80	11 90

In ordering Pinions state diameter of bore required and whether straight or taper.

In telegraphing, where reference is desired to be made to the style of Pinions, use code word *Dicaturam* for "Steel" and *Dicendam* for "Rawhide," as the case may be, placing it after the regular code word designating the Type of Motor.



### Intermediate Gears.

Code Word.	No.	Type of Motor.	Cast Iron.
Allucebam.	1395	T. H. F. 20	\$ 8 40
Allucendam.	1396	" F. 30	10 30
Alludia bam.	1397	" F. 40	11 10
Alpinam.	1398	Edison No. 6	9 30

## Split Axle Gears.

Code Word.	No.	Type of Motor.	Specifications.	Steel.		
Agnoscebam.	1359	T. H. F. 20		\$ 17 40		
Agnoturam.	1360	" F. 30		18 70		
Agnoveram.	1361	" F. 40		20 30		
Albaveram.	1363	" W. P. 30	67 Teeth	25 90		
Albaveram.	1363	" W. P. 50	67 ''	25 90		
Albicabam.	1366	Edison No. 6		19 40		
Albitam.	1368	" " 14	63 Teeth	29 60		
Obvagiam.	4609	G. E. 800	67 ''	25 90		
Obvagiebam.	4610	" 800	64 ''	25 50		
Obvallabam.	4611	" 1000	67 ''	25 90		
Extillatus.	8026	" 1000	66 ''	25 92		
Obvarandam.	4612	" 1000	62 ''	25 30		
Dicturiam.	2774	" 1200	60 ''	25 90		
Diditam.	2776	" 52	67 ''	25 90		
Obventam.	4615	<b>''</b> 53	69 ''	27 40		
Extinctus.	8027	" 54	67 ''	25 92		

In ordering Gears state diameter of bore required.

## Split Axle Gears.

Code Word.	No.	Type of Motor.	Specifications.	Steel.
Obvertebam.	4616	G. E. 57	69 Teeth	\$ 29 00
Obviaturam.	4618	<b>''</b> 57	66 ''	27 80
Obviolabam.	4620	" 57	59 ''	25 30
Diducebam.	2777	<b>''</b> 57	57 ''	25 30
Diducturam.	2778	<b>''</b> 57	52 ''	23 40
Obvolvam.	4621	<b>''</b> 58	69 ''	27 40
Obvolvebam.	4622	<b>''</b> 58	67 ''	25 90
Extirpatus.	8028	<b>"</b> 58	65 ''	25 92
Occalueram.	4623	" 58	62 ''	25 30
Extirpemus.	8029	" 62	67 ''	25 92
Extollimus.	8030	<b>''</b> 67	69 ''	27 42
Occanebam.	4624	<b>"</b> 67	67 ''	25 90
Occasuram.	4625	·· 67	62 ''	25 30
Diffingam.	2782	West. No. 3	62 ''	25 90
Difflabam.	2783	" " 12	68 "	27 80
Difflabam.	2783	" " 12 A	68 "	27 80
Occensam.	4626	""38	<b>6</b> 8 "	27 80
Diffluam.	2785	""38	64 ''	25 90
Diffluebam.	2786	""38	58 ''	25 30
Diffluebam.	2786	" " 38 B	58 "	25 32
Occensuram.	4627	" " 49	68 ''	27 80
Occentabam.	4628	" " 49	66 ''	27 80
Occeptatam.	4629	" " 56	68 ''	27 80
Occiduam.	4630	" " 56	64 ''	25 90
Occinueram.	4631	" " 56	58 ''	25 30
Extorritus.	8031	" " 68	68 "	27 80
Extorsimus.	8032	Walker 4 A	67 ''	25 90
Extorsurus.	8033	" 3-N-800	67 ''	24 00
Occlusuram.	4633	Steel Motor No. 34	67 ''	27 80
Extortus.	8034	"""34	63 ''	25 90

In ordering Gears state diameter of bore required.



### New Commutators.



THESE Commutators are made with drop forged segments and the highest grade of insulation. In addition to those listed below, we are prepared to furnish special Commutators of all kinds promptly to order.

CODE WORD.	NO.		
Altatam.	1400—T. H. F. 20	Each,	\$ 43 80
Altaturam.	1401— " F. 30	"	49 80
Alter cabam.	1403— " S. R. G. 30	"	49 80
Occulebam.	4634— " W. P. 30, Form 1	"	47 35
Occupandam.	4636— " W. P. 30, " 7	"	59 50
Occupatam.	4637— " W. P. 50, " 1	"	48 55
Alucinabam.	1406— " W. P. 50, " 4	"	35 90
Occursabam.	4638— " W. P. 50, " 7	"	58 90
Ocellinam.	4639—Edison No. 6—56 Segments	. 44	31 20
Dilaniatam.	2797— " 8	"	27 10
A mabam.	1409— " " 14	"	42 60
A mandatam.	1410— " " 16	4.6	45 15
Octaveriam.	4641—G. E. 800 Drum, Form 4	"	46 30
Octavianam.	4642— " 800 " " 6	"	<b>54 00</b>
Ocula bam.	4643— " 800 Ring	"	61 45
Dignaturam.	2791— " 1000		51 50
Dignaveram.	2792— " 1200, Form 2	"	69 95
Oculariam.	4644— " 52	"	45 15
Digrunniam.	2795— " 57	"	<b>75 70</b>
Extramus.	8035— " 62	"	45 30
Amarescam.	1412—West. No. 3	"	47 30
A mas cam.	1413— " 12	"	54 35
Dilapsam.	2798— " 12 A	"	57 50
Dilatabam.	2799— " " 38 B	"	87 45
Dilaturam.	2800— " 49	"	49 90
Oculeam.	4647— " 56	**	86 50
Odiosam.	4648— " 69	"	47 60
Odorandam.	4649—Steel Motor No. 34	"	92 00

## Assembled Commutator Segments.



THE following list comprises complete sets of finished drop forged copper and selected mica Segments, assembled and bound together ready to place on commutator shell.

CODE WORD.	NO.		
Ogganniam.	4666T. H. F. 20	Each,	\$ 22 90
Oggerendam.	4667— " F. 30	"	25 80
Olbianam.	4669— " S. R. G. 30	6 6	25 80
Olefactam.	4670— " W. P. 30, Form 1	"	23 15
Oleosam.	4672— " W. P. 30, " 7	"	32 80
Olerabam.	4673— " W. P. 50, " 1	"	24 55
Oleracam.	4674— " W. P. 50, " 4	"	24 35
Oleraturam.	4675— "W. P. 50, " 7	44	34 85
Oleraveram.	4676—Edison No. 6—56 Segments		19 40
Olescebam.	4678— " 8		24 35
Oletandam.	4679— " 14	"	26 25
Oletatam.	4680— " " 16	"	28 45
Olfaciam.	4681—G. E. 800 Drum, Form 4		26 10
Olfaciebam.	4682— " 800 " " 6	"	32 60
Olfactabam.	4683 " 800 Ring	46	48 80
Olfacturam.	4684— " 1000	"	39 60
Olitoriam.	4685— " 1200, Form 2	66	47 35
Olivam.	4686— " 52	4.6	35 70
Ollariam.	4688— " 57	44	54 60
Extrarius.	8036— " 62	6.6	35 70
Olympicam.	4690—West. No. 3		32 00
Omentatam.	4691 " 12	"	38 00
Ominosam.	4692— "     "     12 A	"	42 90
Omnicarpam.	4693— " " 38 B	66	66 05
Omnifariam.	4694 " 49	"	46 00
Omniferam.	4695— " " 56	6.6	66 50
Omnigenam.	4696— " " 69	"	33 30
Omnimodam.	4697—Steel Motor No. 34	66	60 50



## Electric Deck Headlight.



Height, 13 Inches. Width,  $11\frac{1}{4}$  Inches. Diameter of Reflector, 10 Inches.

THE Deck Headlight is mounted on a malleable iron stand which is detachable. The reflector is protected by a heavy outer case of metal, and can be removed for cleaning, etc.

CODE WORD.	NO.						
Appangam.	1576—H	[e <b>a</b> vy	Brass	Case,	Polished and Lacquered	Each,	\$ 9 50
Appanxeram.	1577—	"	Steel	"	Japanned	"	8 90
Apparabam.	1578—	"	Tin	66	"	"	7 65

#### Lamp Extra.

In ordering Headlights specify the style of base required in the Lamp Socket.



## Electric Dash Headlight. Style A.



Diameter of Reflector, 7 Inches. Diameter of Frame,  $8\frac{1}{2}$  Inches. Depth of Frame,  $3\frac{1}{2}$  Inches.

THIS Headlight is attached directly to the outside of the car dash, in consequence of which it is not necessary to cut any holes in it, and as it projects from the dash only 3½ inches, it is protected by the bumper on the sill of the car body.

The parabolic reflector, which is heavily plated, is protected by the malleable iron weather-proof casing surrounding it. This is so constructed that the upper half can be easily raised, allowing free access to the inside of the Headlight.

Lamp Extra.

In ordering Headlights specify the style of base required in the Lamp Socket.

## Electric Dash Headlight. Style B.



Diameter of Reflector, 10 Inches. Diameter of Frame,  $11\frac{1}{2}$  Inches. Depth of Frame,  $4\frac{1}{2}$  Inches.

In this style of Headlight the case is made of No. 18 B. W. G. steel with all parts seamed and riveted, making a strong and durable construction. Like the Style A Headlight shown on the preceding page, it is attached to the front of the dash of the car, without the necessity of cutting the latter away. A simple locking contrivance retains the glass front in position, and admits of ready access to the inside of the lamp.

CODE WORD. NO.
Ostensam. 4762—Headlight......

4762—Headlight......Each, \$ 8 30

### Lamp Extra.

In ordering Headlights specify the style of base required in the Lamp Socket.



### Changeable Electric Headlight.



Height, 23 Inches.

Width, 12 3/4 Inches.

### Diameter of Reflector, 12 Inches.

THIS Headlight projects only 7 inches from the dash and is changeable from end to end of car or from car to car as desired, as the Headlight proper is secured in an iron receptacle or socket attached to dash at either end of car. If two cars are fitted with these receptacles, one Headlight will suffice to equip both of them where only one car is in service at a time. Two styles of contacts are supplied, fitted either on the front or the sides of stem. These are not interchangeable, and the former is furnished unless otherwise specified, the latter being supplied only where other cars are similarly equipped to make an interchangeable equipment. The Headlight can be connected up as an additional light, or so wired as to automatically cut out the corresponding light in the car, no switch being necessary; simply putting the Headlight in position lights the lamp.

CODE WORD.	NO.			
Ditescebam.	2867—Equipment complete for One CarEa	ch, \$	16	00
Otacustam.	4766—Headlight	16	11	00
Otiaturam.	4767—Receptacle '	: 6	2	50
Ovandam.	4768—Porcelain Lamp Socket	"		50

Lamp Extra.

In ordering Headlights or Receptacles specify style of Contact desired, also for Headlights the style of base required in the Lamp Socket.



## Electric Signal Lamp. For Car Body.



Height, 10 Inches.

Extreme Width, 71/4 Inches.

#### Diameter of Lenses, 4 Inches.

THE case of this Lamp is of tin, japanned any color desired to correspond to the body of the car, to which it is secured by a malleable iron plate on the Lamp. It contains two lenses for which any desired color of removable brass bound disques will be supplied for changing signals.

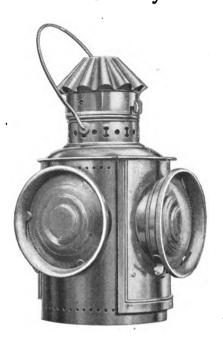
CODE WORD.	NO.				
Ovicaveram.	4773—Signal	Lamp	Each,	\$ 5 30	)
Oviparam.	4774—Amber	Disque	. "	26	ì
Oxyporam.	4775—Ruby	"	. "	26	j
Pahulandam.	4776—Green	66	. "	26	;

#### Lamp and Disques Extra.

In ordering Lamps specify the style of base required in the Lamp Socket, and the color of the Disques to be used with the Lenses.



## Oil Signal Lamp. For Car Body.



Height, 12 Inches.

Width, 71/2 Inches.

#### Diameter of Lenses, 4 Inches.

As a means of securing it to the car body, the case of the Lamp has a socket riveted to the side. Its use is to designate the route of the car and for this purpose such colors of lenses as listed below will be furnished.

									•					
CODE WORD.	NO.													
Pabulatam.	4777	Signal	Lamp,	with	two	4	inch	Green	Lense	s	Each,	\$ 5	72	
Pabulosam.	4778	66	"	"	three	4	"	"	"		"	6	36	
Publiciam.	5393	"	"	"	two	4		Ruby				6	36	
Pudibundam.	5394	"	"	"	three	4	"	"	"		"	7	00	
Puellascam.	5395	"	"	"	two	4	"	Ambe	r "		"	5	72	
Puertiam.	5396—	66	66	"	three	4	"	"	"		"	6	36	

In ordering Lamps specify the color of the Lenses required.



## Tin Lantern. Railroad Type.



THE upright supports of this Lantern are constructed of a double thickness of steel wire in one continuous piece, as shown in the above illustration, more than doubling the strength of the frame of the Lantern, and adding but little in weight. The Lantern is intended for use with sperm oil or kerosene, and is fitted with a burner to take a 5/8 inch wick.

CODE WORD.  Exululamus.	NO. 8048—Lantern with Clear Glass GlobePer Dozen, \$	13 80
Exunctus.	8049—Globe for Lantern, Clear Glass " "	1 90
Exundandus.	8050— " " Ruby " " "	5 30

## Tin Lantern. Tubular Form.

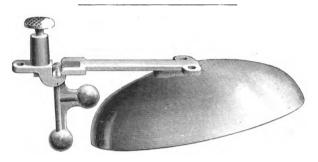


THE supporting arms of this Lantern are made of a two-piece tin tube, and a wire guard protects the globe from accidental blows. The Lantern is intended for use with kerosene oil and is furnished with a burner to take a 1/2 inch wick.

CODE WORD.	NO.	
Exundatus.	8051—Lantern with Clear Glass GlobePer Dozen,	\$ 20 60
Exundemus.	8052—Globe for Lantern, Clear Glass " "	1 90
Exuperatus.	8053— " " Ruby " " "	5 30

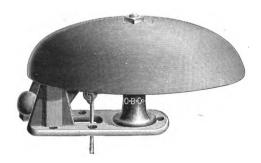
## Rolled Steel Gongs.

The shells of these Gongs are guaranteed not to crack or break, and any proving defective will be replaced.



### Foot Gong.

CODE WORD.	NO.						
Discave bam.	2823—F	oot Gong	complete,	8 inc	ch	.Each,	\$ 2 60
Discedam.	2824—	"	"	9 '	•	"	2 70
Antestabam.	1558—	"	44	10 '	"	"	2 94
Anteveniam.	1559—	"	"	12 4	"	"	3 14



### Roof Gong.

CODE WORD.	NO.								
${\it Discedebam}.$	2825—I	Roof	Gong	complete,	8	incl	h	.Each,	\$ 2 92
Discentiam.	<b>2826</b> —	"	46	44	9	"		. "	3 02
Antiquabam.	1562	"	"	"	10	"		. "	3 26
Anulaturam.	1563—	"	"	44	12	"		. "	3 44

## Rolled Steel Gongs.

### Foot Gong Parts.

CODE WORD.	NO.														
Discernam.	2827—T	wo-E	Ball S	Stril	cer fo	r 8	inch	Gong	<b>z</b>		<b></b>	 E	ach,	<b>\$</b> 0	42
Discideram.	2828—	"		"	"	9	"	"		• • • •		 	"		42
Discindam.	2829	"		"	"	10	"	"				 	"		42
Discludam.	2830	"		"	"	12	"	"				 	"		42
Discoquam.	2831—F	'rame	e for	r 8	inch (	Gong	g					 	"		94
Discordiam.	2832	"	"	9	"	"						 	"	1	05
Discrepam.	2833	66	44	10	"	"						 	"	1	15
Discupitam.	2834—	"	"	12	"	"						 	"	1	35
Discutiam.	2835—F	lung	er Pi	in								 	"		22

### Roof Gong Parts.

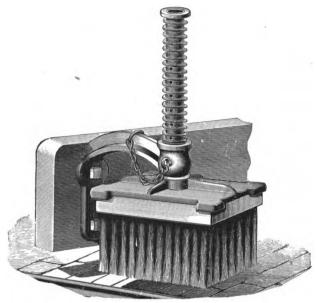
CODE WORD.	NO.										
Disdendam.	2836—S	trike	r and	Lever	for	8	inch	Gong	g	Each,	<b>\$ 0 83</b>
Disjeceram.	2837—	"	"	"	"	9	"	4.6		····· "	83
Dis $j$ u $g$ a $b$ a $m$ .	2838—	"	"	"	"	10	"	"		"	83
Disjungam.	<b>283</b> 9—	"	"	"	"	12	"	"		"	83
Dispalatam.	2840—F	'rame	e for	8 inch	Gon	g				"	1 07
Dispandam.	2841—	"	"	9 "	"					"	1 07
Disparabam.	2842-	"	"	10''	"					"	1 07
Dispartiam.	2843	"	"	12''	"					"	1 07

### Foot or Roof Gong Shells.

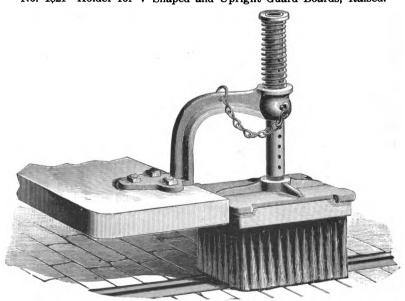
CODE WORD.	NO.							
						h		
Dispennam.	2845—	"	"	9	"	•	"	1 76
Disperdam.	2846—	"	"	10	"		"	2 00
Displodam.	2847	"	46	12	"		"	2 29

## Adjustable Track Brush Holder.

Patented.



No. 1821-Holder for V Shaped and Upright Guard Boards, Raised.



No. 1822-Holder for Flat Guard Board, Lowered.

### Adjustable Track Brush Holder.

#### Patented.

THE working parts of the Adjustable Track Brush Holder are few in number and simple in design, being of such a nature that they are not liable to get out of repair; no bolts, set screws or nuts being used in the adjusting parts. In the event of the cotter pin being accidentally removed or becoming useless, the elasticity of the spring lifts the broom clear of the rail and entirely out of the way of danger; the broom in this case simply failing to perform its work. The pipe standard is of sufficient length to permit the use of track brooms with varying lengths of wires, also to allow for the natural wear of them in service; the holes in the pipe being drilled closely together, and a nicety of adjustment thus provided for. The brooms are lowered on to the rail by removing the cotter pin from the Holder, then depressing the pipe standard, and inserting the pin again in whichever one of the holes in the pipe that will best give the desired tension. In raising the brooms the cotter pin is taken out and the elasticity of the steel spring lifts them clear of the rail. It is advisable, however, to lock the pipe standard so that the weight of the broom will be taken from the spring by placing the pin in the lowest hole in the pipe.

In placing the Track Brush Holders in position on the guard board, they should be set so that sufficient clearance from the rail will be given to the track brooms when in the raised or "off" position, and due allowance should also be made for the wear of the steel wires of the brooms so that the pipe standard can always be depressed sufficiently

to give them the required adjustment.

For sloping guard boards it will be found advisable to so change the hanger irons on them that the board will be placed in the most convenient position to use either of the styles of Holders listed.

CODE WORD.	NO
Cevam.	1821—Holder for V Shaped and Upright
	Guard BoardsPer Set of 4, \$ 13 50
Chalabam.	1822—Holder for Flat Guard Boards " " 4, 13 50
Exudamus.	8044—Top Plate for No. 1550 Track Broom " " 4, 1 65
Exudaremus.	
Exudaturus.	8046— " " " " 1553 " " " " 4, 1 65
Exavimus.	8047— " " " 1551, 2135 and
	2136 Track Brooms " " 4. 1 76

Prices on Holders do not include Top Plates, which must be ordered separately.

For list of Steel Wire Track Brooms see the following page.



### Steel Wire Track Brooms.

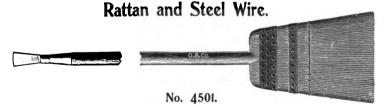


Nos. 1553 and 2136.

THE wire used in the manufacture of these Track Brooms is made from a high grade of steel, which is especially oil tempered for the purpose. The backing in which the wires are fastened is a heavy, hardwood block.

Code Word.	No.	Style.	Length.	Width.	Length Wire.	Price per Dozen.
Antecellam. Anteceptam. Dimidiabam. Anteurram. Anteferam. Diminuam.	1550 1551 2135 1552 1553 2136	Medium Round End	5¾ 8 8 8½ 8 8 8	5 ¼ 4 4 6 ½ 3 ½ 4	4½ 4 4¾ 6 4 4½	\$ 19 00 9 50 11 85 31 60 9 50 12 65

Hand Brooms.



THESE Brooms are very substantially constructed of the best materials and are especially adapted for use on curve and switch rails. The ends of Nos. 4501 and 4502 are fitted with a forged steel cleaning chisel, the socket of which is shrunk on to the handle, making it absolutely secure.

CODE WORD.	NO.				
Diminuebam.	2137—Rattan, Width of Sweep 11 in., Height of				
	Broom 13 in., Handle 38 in	.Per	Dozen.	\$ 12	55
Oblinendam.	4501—Rattan with Chisel Handle, Width of Sweep				
•	11 in., Height of Broom 13 in., Handle				
	44 in	"	"	14	45
Oblinitam.	4502—Upright Steel Wire with Chisel Handle,		•		
•••••	Width of Sweep 11 in., Length of Wire				
	4½ in., Handle 44 in	66	66	10	40
	1/2, 224 22				

## Hand Brooms. Corn and Rattan. Mixed.



THIS Broom is made of corn and rattan, mixed, securely bound with heavy steel bands and wrought iron nails. It is especially recommended for use as a "vestibule" broom.

CODE WORD.

NO.

Erutus.

7815—Broom, Corn and Rattan, Mixed, Width of Sweep 12 in., Height of Broom 12

in., Handle 38 in..... Per Dozen, \$ 7 55

### Corn and Rattan.



Nos. 7816-7818.

OR coarse and heavy sweeping of all kinds, both indoor and outdoor, these Brooms will be found especially suitable. The Nos. 7816 and 7817 are made of long, selected pure corn stock, and the No. 7818 of corn and rattan, mixed.

CODE WORD.	NO.				
Eryngebus.	7816—Broom, all Corn, Width of Sweep 12 in., Height of Broom 16 in., Handle 38 in	Per	Dozen,	\$ 8	70
Erythinus.	7817—Broom, all Corn, Extra Heavy, Width of Sweep 13 in., Height of Broom 16 in., Handle 38 in	"	"	9	40
Ethnicus.	7818—Broom, Corn and Rattan, Mixed, Width of Sweep 12 in., Height of Broom 15 in., Handle 38 in	"	"	9	40

# Car Washers. Style A. Plain.



Made of all gray hair, drawn in with brass wire.

Style B. With Rubber Protecting Ring.



THIS Washer is made throughout of the best materials and in every respect is equal to the best on the market. The outer edge of the block is provided with a heavy rubber protecting ring to prevent injury to finished woodwork in using the Washer. Pure, stiff Russia bristles are used, drawn in with brass wire.

## Car Washer. Style C.



THIS Washer is made of extra quality black hair drawn into the block with brass wire.

CODE WORD. NO.
Eumecibus. 7822—Car Washer......Per Dozen, \$ 30 20

### Car Dusters.

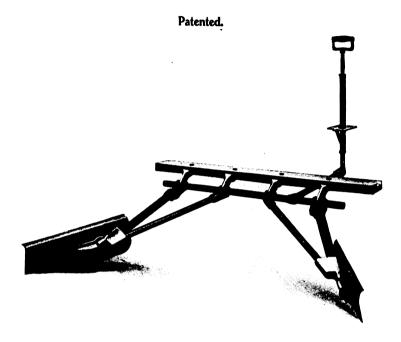


THESE Dusters are made of soft gray hair, and are especially suitable for railroad use.

### Snow Sweeper Rattan.

We can promptly furnish Rattan suitable for Snow Sweepers, Track Brooms, etc., either in natural length or cut to specified length.

### Monarch Track Cleaner.



THE Monarch Track Cleaner is of very substantial construction, and on account of its peculiar design, combines the requisite strength with extreme lightness of weight. The castings are all of malleable iron, the blades of steel and the supporting cross bar of thoroughly seasoned oak. The rock shaft, through the medium of which the blades are readily raised and lowered, is a piece of 1 inch pipe. These blades, when in use, are held to the track under tension by means of two flat, steel springs. A separate adjustment is provided for each blade, so that should one of them come into contact with an unusually heavy obstacle, it will raise independently of the other. A removable shoe is attached to each blade at the scraping point, and this when worn out, can be easily and cheaply replaced. These Cleaners are readily adjustable to different sized cars and the various gauges of track.

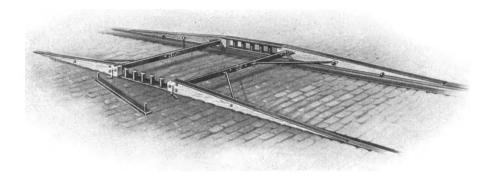
CODE WORD. NO.

Fellicatam. 3043—Track Cleaner......Each, \$ 28 00

For ordering Track Cleaners a printed form stating data required will be furnished upon application.

## Emergency Hose Bridge.

Patented.



THE Emergency Hose Bridge, as its name implies, is designed to keep cars running over a track crossed by fire hose without loss of time. It is formed of two parallel trusses, 16 feet in length, fastened together by two double-hinged joints. When opened the joints form a cross bar, and become a rigid connection between the two trusses, each cross bar being locked in position by two iron rods which are permanently fastened to the truss by an eye and staple at one end, and when in use are hooked into the center of the cross bar at the other. These rods form four braces which render the Bridge perfectly rigid. A steel lug an inch in length projects downward from the inside of the lower rail of the trusses at each of their ends. When the Bridge is in position, these lugs fit just inside of the inner side of the track rail and keep the Bridge from sliding off it sideways.

The trusses are flat on the bottom and set on the top of the rail. They are 5½ inches high at their highest point, and the slope toward either end is gradual. The hose pockets are six in number, and are made up of very strong partitions which support the heavy steel removable top rail. The weight of the Bridge complete is approximately 200

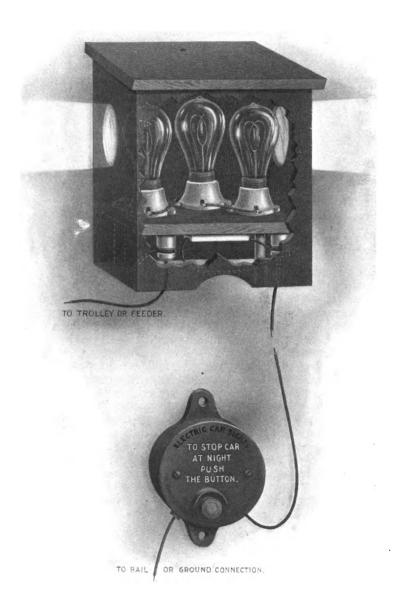
pounds.

CODE WORD. NO.

Ecferam. 2933—Hose Bridge..... Each, \$ 110 00

In ordering Hose Bridges state the gauge of track on which they are to be used.

## Electric Car Signal.



## Electric Car Signal.

THIS device is intended for the use of passengers for signaling electric cars to stop at cross-roads, flag stations, etc. It is so simple that, a child can operate the Signal with perfect safety, and stop a car on the darkest night, and at the loneliest part of the road. The use of this device will prevent the necessity of making sudden stops at night, as the Signal can be seen a distance of approximately 1,000 feet, giving the motorman ample time to stop the car at the proper place. To signal a car to stop, it is only necessary to push the button in the contact box. This throws on the lights in the signal box located at the top of the pole, and attracts the motorman's attention. The lights remain lit only as long as the push button is pressed.

The Signal proper consists of a hardwood box with a 4-inch opening in each side, fitted with green glass. One end of the lamp circuit is tapped on to the trolley, or a convenient feeder wire, the other being connected through the contact box with one of the rails. A fuse cutout is provided in the lamp circuit, as a protection to the latter against grounds and short circuits. The push button is encased in an iron box. which is perfectly weather-proof and so constructed that it is practically impossible for any one to tamper with it, no delicate mechanism liable to derangement being used in its construction. The Signal is furnished complete as shown on the opposite page, with the exception of the necessary wire for connecting it up, and the lamps for the signal box. For the former either weatherproof or rubber covered wire is recommended, and for the latter, three 220 volt lamps of either 8 or 16 c. p. should be used. The porcelain receptacles provided are supplied with Edison, T. H. or Westinghouse bases, as ordered, but Edison bases are regularly furnished unless otherwise specified.

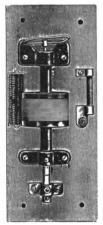
> In ordering Car Signals specify the style of lamp base desired in the Porcelain Receptacles.

> > For Incandescent Lamps see page 349.



# Garton Lightning Arrester. For Direct Current Circuits.

THE various forms of Arresters illustrated on this and the opposite page, are alike in their construction and operation, the only difference in them being in the mountings.



Station Arrester, Marble Base.

CODE WORD.

The Station Arrester here shown is intended for the protection of the apparatus in power stations. Each outside circuit should be provided with at least one Arrester connected in at the

switchboard. The "Style R" Arrester shown in the price list is mounted on a wooden template for remounting on switchboards.

The Car Arrester with iron cover shown in the accompanying cut is mounted in a moisture and fire proof box, and provided with porcelain bushings to insulate the flexible lead-in wires. These Ar-

resters are also supplied with wood covers when preferred. The latter are very carefully made and are strong and durable.



Car Arrester, Iron Cover

#### For 110—250 Volt D. C. Circuits.

Extricamus. Extritus. Extrudimus. Extrusurus.	8037—Station Arrester, 8038— "" 8039— "" 8040— ""	Marble BaseEach, Marbleized Slate Base"  Dipped Plain """  Style R"	\$ 11 22 10 20 8 16 9 18
CODE WORD.	For 350—600	Volt D. C. Circuits.	
Ascribebam.	1681—Station Arrester	, Marble BaseEach,	\$ 11 22
Duplabam.	2914— " "	Marbleized Slate Base"	10 20
Duplariam.		Dipped Plain " " "	8 16
Duplaturam.	2916— " "	Style R	9 18
Asculanam.	1682—Car "	Iron Cover "	7 74
Duplaveram.	2917— "	Wood " "	6 16

## Garton Lightning Arrester.

#### For Direct Current Circuits.



Pole Arrester, Iron Cover.

by experience to be the best.

To insure ample protection to the line, experience has shown that from five to ten Arresters to the mile should be used. This provides ample outlet for the discharge and requires less service of each Arrester during severe storms. Where not less than five Arresters are used to a mile of line, they are guaranteed for one year from date of shipment.

The Arresters for poles are made with both iron and wood covers. The Arrester with iron cover is provided with flanges at top and sides to permit fastening to the pole or support. The connecting wires

porcelain bushings in bottom of box, and the

The Pole Arrester with wood cover is illustrated herewith. This cover is made from clear, selected stock with tongued and grooved construction at the exposed joints, is durably painted and thoroughly satisfactory under all conditions. The box is provided with a sliding lid and spring catch to permit easy inspection, and is also furnished with iron strips at top and bottom to attach to pole or other support.

general make-up is such as has been proven



Pole Arrester, Wood Cover.

For	110-	-250	Volt	D.	C.	Circuits.

Extumemus. Extumidus.	NO. 8041—Pole Arrester, Iron Cover
	For 350-600 Volt D. C. Circuits.
CODE WORD.	NO.
Asininam.	1683—Pole Arrester, Iron Cover

## Wurts Lightning Arrester.

#### For Direct Current Circuits.



Pole and Car Arrester.

THE Wurts Lightning Arrester illustrated above is of the Single Pole type and is equally suitable for the protection of either the line or the car equipments. It is intended for use on direct current circuits of from 125 to 600 volts. The design and construction of this Arrester is such that not only does it prevent the formation of the arc, but it keeps down any dangerous rise of line potential, two important conditions which a lightning arrester must meet in order to successfully fulfill its mission.

As the above illustration indicates, the Arrester is completely enclosed in an inverted cast iron box with a lid on the bottom, thus preventing any possibility of moisture reaching the working parts of the Arrester, which are thoroughly insulated from the iron cover. This Arrester can also be used as a Station Arrester, if desired.

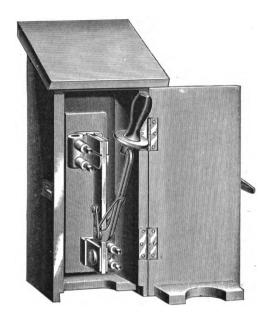
CODE WORD. NO.

Durandam. 2919—Pole and Car Arrester......Each, \$ 5 40

### Line Section Switch.

Patented.

#### With Wooden Cover.



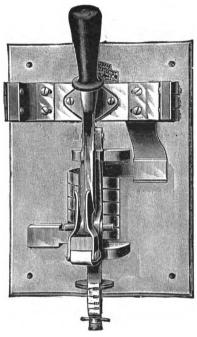
THE improved form of Line Section Switch which is shown in the above cut is of the Quick Break type mounted on a slate base and enclosed with a wooden cover. The movable side of the Switch is connected to the trolley wire and is so constructed that even when it is open the door can be closed and locked, thus preventing any interference with the line by an inexperienced person. The smaller sizes of this Switch are furnished either with or without fuse connections, as indicated in the following list.

CODE WORD.  Ascendedam.	NO. 1673—S	witch	complete,	400 .	Ampere	es	<b>Ea</b> ch,	\$ 7 90
Dumescam.	2913—	"	31	400	7.	Fused	"'	10 45
Pelviculam.	4861	"	44	600	"		"	9 85
Pendeam.	4862	"	"	600	"	Fused	"	12 80
Penelopeam.	4864	"	"	800	"		"	17 30
Peninsulam.	4866—	"	"	1000	"		"	21 35

#### I-T-E Circuit Breaker.

### Single Pole, Standard Switchboard Type.

For Direct Current Circuits.



Base: 80 to 700 Amperes, Size: 10 x 14 x 1½ inches. " 800 " 1500 " " 12 x 15 x 1¾ "

Studs: 80 " 700 " Project 4½ inches from back of base. " 800 " 1500 " " 5½ " " " " " "

THIS type of Circuit Breaker is especially designed for use on direct current circuits of 600 volts or less, where heavy currents are used for heat, light and power. All working parts are strong and well proportioned; the current-carrying parts are made of high grade copper, so proportioned that the heating of any part of the Circuit Breaker will not exceed 20 degrees C. above surrounding temperature in constant use at "actual rating." It has a wide, clean, double break, is quick and reliable in action, and will operate within 5 per cent of its adjustment.

The main contacts are protected by a final carbon break designed to meet the severe conditions of opening a circuit of high voltage on overload or short circuits. Back connections are provided for by threaded studs and nuts on back of base. Face connections will only

be supplied upon special request, at the same prices.

### I-T-E Circuit Breaker.

### Single Pole, Standard Switchboard Type.

For Direct Current Circuits.

A LL Circuit Breakers will be mounted on black enameled slate bases, unless otherwise ordered. When it is desired to mount them directly on switchboards they will be furnished on slate templates, with proper length bolts where thickness of the switchboard is given; otherwise provision will be made for 2 inch switchboards.

As regularly supplied, all current-carrying parts have a polished copper finish, the framework being finished in dead black. When so ordered, framework will be finished in polished copper without additional charge, or in polished nickel at an advance of 10 per cent on the list prices given below.

Code Word.	No.	Actual Rating in Amperes.	Lowest Capacity in Amperes.	Highest Capacity in Amperes.	Price Each.
Dormitabam.	2898	80	60	120	\$ 43 50
Dormituram.	2899	100	75	150	43 50
Dormiveram.	2900	150	110	225	43 50
Drensabam.	2901	200	150	300	45 00
Drindiam.	2902	300	225	525	54 50
Ducenam.	2904	400	300	600	61 00
Ductabam.	2905	500	375	750	64 00
Ductaturam.	2906	600	450	900	67 00
Percenseam.	4895	700	525	1000	71 50
Ductaveram.	2907	800	600	1200	90 00
Dulcaturam.	2909	1000	800	1500	102 25
Dulciferam.	2911	1250	900	1800	112 50
Perceperam.	4896	1500	1200	2250	130 00

In ordering Circuit Breakers, to determine the size required, refer to the lowest and highest range of adjustment between which points they will be operated; the actual rating being given only to denote the capacity for continuous load, at which the heating will not exceed 20° C. above surrounding temperature.

## Weston Railway Voltmeter.

#### Round Pattern.

For Direct Current Circuits.



THE "Round Pattern" style of Voltmeters and Ammeters is based on the same principle as the celebrated Weston Portable Standard Instruments. They are extremely "dead beat" and their scales are absolutely proportional throughout their entire reading. Being encased in dust proof iron cases, they are thoroughly protected from disturbing influences of external magnetic fields. The Voltmeters are free from heating errors, and may be left in the circuit continuously without impairing their accuracy.

CODE WORD.	NO.											
Ebibendam.	2922—Scale	, 0 to	50	Volts,	in	.5	Volt	Divisions	3 <b></b> .	Each,	\$ 26	50
As sabam.	1694—"	0 "	75	"	"	.5	"	44		. "	27	25
Assaturam.	1695—"	0 "	125	"	"	1	"	44		. "	28	25
As saveram.	1696—"	0 "	150	"	"	1	"	66		. "	29	50
Ebibitam.	2923—"	0 "	250	"	"	2	"	4.6		. "	31	50
Asseculam.	1697—"	0 "	300	"	"	2	"	"		. "	32	50
Assederam.	1698—"	0 "	600	"	"	5	"	4.6		. "	35	00
Asserendam.	1699 "	0 "	750	"	"	5	"	"		. "	37	00

The above prices are for a dead black japan with nickel trimmings finish; for all nickel plated, brass or copper finishes, add \$2.00 net.



## Weston Railway Ammeter.

#### Round Pattern.

For Direct Current Circuits.



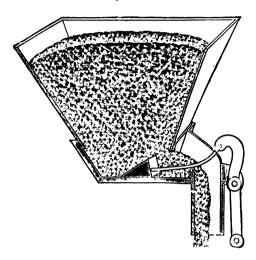
Instrument with Separate Shunt.

NO.					
2924—Scale, 0 to	100 Amperes,	in 1 Ar	npere Divisions	Each,	<b>\$</b> 26 50
1700— " 0 "	150 "	" 1	"	"	<b>27</b> 00
1701— " 0 "	200 "	" 2	"	"	28 00
2925—"0"	250 "	<b>"</b> 2	"	"	28 25
1702— " 0 "	300 "	" 2	"	"	28 25
1703— " 0 "	400 "	<b>"</b> 5	"	"	28 50
1704— " 0 "	500 "	<b>"</b> 5	" "	"	29 50
1705— " 0 "	600 ''	<b>"</b> 5	"	"	30 50
1706— " 0 "	<b>75</b> 0 "	<b>"</b> 5	"	"	<b>31</b> 50
1707— " 0 "	1000 "	" 10	"	"	<b>32</b> 50
2926— " 0 "	1200 "	" 10	"	"	<b>33</b> 50
2927—".0"	1500 ''	" 10	"	"	39 25
2928— " 0"	2000 "	<b>" 20</b>	"	"	43 75
2929— " 0"	2500 "	" 20	"	"	45 25
	2924—Scale, 0 to 1700— " 0 " 1701— " 0 " 2925— " 0 " 1702— " 0 " 1704— " 0 " 1705— " 0 " 1706— " 0 " 1707— " 0 " 2926— " 0 " 2927— " 0 "	2924—Scale, 0 to 100 Amperes, 1700— " 0 " 150 " 1701— " 0 " 200 " 2925— " 0 " 250 " 1702— " 0 " 300 " 1703— " 0 " 400 " 1704— " 0 " 500 " 1705— " 0 " 600 " 1706— " 0 " 750 " 1707— " 0 " 1000 " 2926— " 0 " 1200 " 2927— " 0 " 1500 "	2924—Scale, 0 to 100 Amperes, in 1 Am 1700— " 0 " 150 " " 1 1701— " 0 " 200 " " 2 2925— " 0 " 250 " " 2 1702— " 0 " 300 " " 2 1703— " 0 " 400 " " 5 1704— " 0 " 500 " " 5 1705— " 0 " 600 " " 5 1706— " 0 " 750 " " 5 1707— " 0 " 1000 " " 10 2926— " 0 " 1500 " " 10 2927— " 0 " 1500 " " 10 2928— " 0 " 2000 " " 20	2924—Scale, 0 to 100 Amperes, in 1 Ampere Divisions 1700— " 0 " 150 " " 1 " " 1701— " 0 " 200 " " 2 " " 2925— " 0 " 250 " " 2 " " 1702— " 0 " 300 " " 2 " " 1703— " 0 " 400 " " 5 " " 1704— " 0 " 500 " " 5 " " 1705— " 0 " 600 " " 5 " " 1706— " 0 " 750 " " 5 " " 1707— " 0 " 1000 " " 10 " " 2926— " 0 " 1200 " " 10 " " 2927— " 0 " 1500 " " 10 " " 2928— " 0 " 2000 " " 20 " "	2924—Scale, 0 to 100 Amperes, in 1 Ampere Divisions. Each,         1700— " 0 " 150 " " 1 " " "         1701— " 0 " 200 " " 2 " " "         2925— " 0 " 250 " " 2 " " "         1702— " 0 " 300 " " 2 " 2 " " "         1703— " 0 " 400 " " 5 " " "         1704— " 0 " 500 " " 5 " " "         1705— " 0 " 600 " " 5 " " "         1706— " 0 " 750 " " 5 " " "         1707— " 0 " 1000 " " 10 " " "         2926— " 0 " 1500 " " 10 " " "         2927— " 0 " 1500 " " 10 " " "         2928— " 0 " 2000 " " 200 " " 20 " " "

The above prices are for a dead black japan with nickel trimmings finish; for all nickel plated, brass or copper finishes add \$2.00 net.



# Ham Sand Box. Style A.



'HE Ham Sand Box, illustrated on this and the following pages, possesses a number of distinctive features which will appeal to every practical street railway man. This Box was designed with a view to preventing the troubles experienced with all sand boxes having a valve for regulating the flow of the sand. If the valve in the latter is made tight enough to prevent the sand from sifting through, it will require considerable force to operate it, while if the valve is loose enough to work easily, the sand will sift around it. If a pebble or small piece of foreign substance gets into the valve slide, it will hold the valve open, allowing all of the sand to run out of the box, a condition which would prove quite serious in cases of emergency. The Sand Box illustrated above is located inside the car where it is free from the effects of flying water and ice. The pressure of the foot pushes the hoe to the rear of the box, loosening up the sand, and the spring draws it forward and delivers the required quantity on the rail. The strokes of the foot may follow each other so rapidly as to practically secure a continuous, but small, stream of sand, a decided advantage in hill climbing.

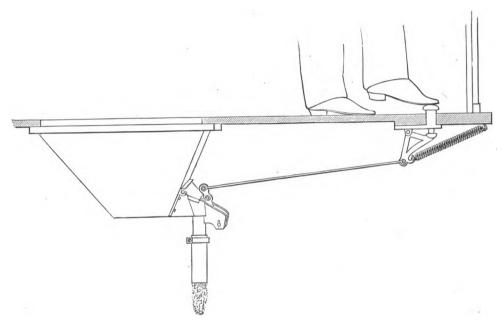
CODE WORD. NO.

Exurgendus. 8054—Sand Box Equipment, complete......Each, \$ 8 50

A Style A Equipment includes one Sand Box with standard size of galvanized iron hopper; one Flexible Wire Spout; one Foot Lever (including one Pin for each set of two Boxes), and one Spring.

### Ham Sand Box.

Style B.



THE essential difference between the Style B illustrated above and the Style A on the opposite page is, that in the Style B the box is located under the car platform. The box is filled through a handhole in the platform, and thus allows easy access to the interior of the hopper and box. The principle of operation of this form of sand box is similar to that of the Style A. On account of the Style B Box being in a more exposed position, it is made water-tight by a cover which protects the mechanism at the outlet.

CODE WORD. NO.

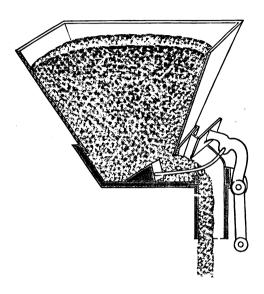
Exussimus. 8055—Sand Box Equipment, complete......Each, \$ 10 00

A Style B Equipment includes one Sand Box with standard size of galvanized iron hopper; one short length of Hose; one Foot Lever (including one Pin for each set of two Boxes), and one Spring.



## Ham Sand Box.

#### Style C.



THE Style C Sand Box illustrated above has been designed to meet the requirements where a steady stream of sand is preferred to an intermittent one, as in the Styles A and B described on the preceding pages. The Style C Box is so constructed that when the lever is depressed, a steady stream of sand flows; but at the same time the leakage and waste common to boxes operated on the valve principle, is avoided. This Box is provided with a wedge for breaking up the sand, and has also a movable gate, which, when lifted, permits the sand to flow in a steady stream. When the gate drops back in its normal position, it instantly and positively stops the outflow, while the operation of it is not affected by any sticks or stones with which it might come into contact.

A Style C Equipment includes one Sand Box with standard size of galvanized iron hopper; one Flexible Wire Spout; one Foot Lever (including one Pin for each set of two Boxes), and one Spring.

## Sterling Fare Register.

No. 5.

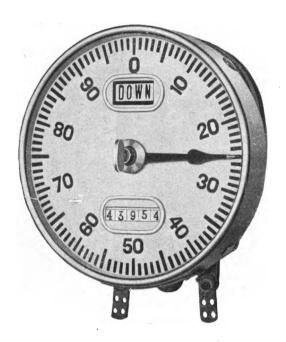


'HE mechanism of this Register is simple and substantial in construction, positive in operation and absolutely reliable under all conditions. It has but few parts, all of which are made extra heavy, and, being interchangeable, can be replaced at any time should they become broken by accident. The Register is of the "numeral" type, and the figures, which are 115 inches high on both trip and totalizer, can be easily read from any part of the car. At the beginning of each registration red blinds appear at both trip and totalizer apertures, screening the unit figures and remaining in view while the bell rings and until the record has been completed and the lever released. registration of a fare once started must be entirely recorded before anything else can be done, as the red blinds will make the failure to do so obvious to every passenger. The Register can be operated by either rod or cord from either or both sides of the car. The case is of brass, copper oxidized, and the dial is of steel. The size of the Register is 9 inches square.

CODE WORD. NO.

Register Fittings furnished to order.

# Sterling Fare Register.



THE Sterling No. 3 Register illustrated above is of the dial type, the trip indicator being the hand that passes around the dial. By pulling out the center knob the handle can be turned back to zero, but any attempt to stop it elsewhere locks the machine and prevents operation. The totalizer acts only in conformity with the trip mechanism, and cannot be set either way. The Register can be operated by either a cord or rod device from either side of the car. All parts throughout are made of the best materials, and are interchangeable. The figures are black on a white background. The trip indicator registers 99, and the totalizer 99,999. The case of the Register is of steel, copper oxidized, and is 11½ inches in diameter.

CODE WORD. Exvecturus.

NO. 8058—Fare Register.....

.....Each, \$ 34 00

Register Fittings furnished to order.

# Sterling Fare Register.



THIS is a new and improved form of double register, recording cash fares and transfers, or any two kinds of fares. The descriptive signs are disappearing; for example, with the registration of cash fares, the "cash fare" sign comes into view and remains as long as cash fares are recorded, the "transfer" sign being in the meantime invisible, but appearing with the registration of a transfer, when the "cash fare" sign disappears. In addition to the signs indicating the kind of fares registered, this is also indicated by the bell, one kind of fare being signaled by a bell and the other by a gong. The mechanism is interlocking throughout, and all parts are heavy and strong, insuring great durability. The indicator figures are large, those of the trip trains being 1½ and the totalizers ½ inches high. Each side of the trip train registers 999 and the totalizers 99,999. The operating back provides for rod or cord connection to either side of the car. The case of the Register is of spun brass, copper oxidized, making a handsome and permanent finish. It is 12 inches in diameter.

Register Fittings furnished to order.

## Steel Bell and Register Cord Coupling.



#### Cut Full Size.

CODE WORD.	NO.									
Perignaram.	4950-C	oupling	for	1/4	inch	Cord	 Per	Pair,	\$ 0	17
Perimam.	4951-	"	"	5 16	"	"	 "	6.6		20
Perimebam.	4952-	"	"	3/8	"	"	 . "	"		24

## Triton Cord Coupler.





Single.

Double.

THE above illustrations show full size views of the Single and Double Couplers for leather cord. Those for cotton cord are similar but somewhat longer, so as to obtain a greater gripping effect, which is required. The Single Coupler makes a perfectly smooth round splicer which will pass freely through the register or bell cord fittings. The Double Coupler is used for making loops or joining two cords together side by side.

The Couplers are applied with special pliers made for this purpose, each jaw containing a place to insert the different sizes so that they may be closed tightly about the cord.

CODE WORD.  Perfugeram.	NO. 4941—Single C	ounle	r for	1/	inch	Loathor	Par	100	<b>Q</b> 11	1.1
Perfulciam.	4942— "	"								14
Perfurebam.	4943— "	"							11	14
Perfusam.	4944 ''	"	"	5	"	"	 . "	"	11	14
Pergameam.	4945—Double	"	"	1/4	"	Leather	 . "	"	. 17	40
Pergignam.	4946 ''	"	"	5 T 8	"	"	 . "	"	17	40
Pergliscam.	4947— ''	66							17	40
Pergratam.	4948— "	"	44	5	"	"	 . "	"	17	40
Perhauriam.	4949—Special								3	14

## Leather Bell and Register Cord.



## Made from selected, oak tanned stock and put up regularly on spools containing 500 feet.

CODE WORD.  Perinungam.	NO. 4953—Full Round C	ord,	1/4	inch	diameter	·	 	Per	100	Feet,	\$ :	3	32
Perinvitam.	4954—Oval	"	1/4	"	44		 	"	"	"	;	3	04
Perlatebam.	4955—Full Round	"	i e	"	"		 	"	"	"	(	6	10
Perlavatam.	4956—Oval	"	5 1 8	44	"		 	"	"	"	!	5	80
Perlaxabam.	4957—Full Round	"	3/8	"	44		 	"	"	"	15	2	68
Perlimabam.	4958—Oval	"	3/8	"	44		 	"	"	66	10	0	14

## Gale's Commutator Compound.



THE use of this Compound will add materially to the life of a commutator by keeping the surface of it in perfect condition and preventing the brushes from cutting. After being applied for a few days it will impart a high finish to the commutator, and a great saving in the wear of the brushes and commutator will be noticed. The Compound will not gum the brushes.

CODE WORD.	NO.			
Fabacius.	8060—Commutator	Compound	Per Dozen,	<b>\$</b> 12 00

# Bronze Signal Bells. Style A.



Cut 1/3 Actual Size.

## Style C.



Cut 1/3 Actual Size.

CODE WORD. NO.

Perfriatam. 4939—Signal Bell, 5½ inch Gong......Each, \$ 3 48

# Controller Handles. For Type K Controllers.



#### Operating Handles.

Permerebam.	4970—G. E. No. 16921. For Types K, K 2, K 10, K 11 and K 12 Controllers
CODE WORD.	Reversing Handles.
	1.00
Permistam	4971—G. E. No. 16922. For Types K and K 2 Controllers. Each, \$ 1 60 4972— " 17778. " K 10, K 11 and K 12
1 or modum.	Controller 1100 H 10, H 11 and H 12

# Controller Contact Parts. For Type K Controllers.



#### Operating Fingers.

Code Word.	No.	G. E. No.	Type of Controller.	No. to a Set.	Price Each.
Permodicam.	4973	14682	K	11	\$ 0 21
Permolam.	4974	14682	K 2	12	21
Permoturam.	4975	19680	K 10	11	21
Permoveam.	4976	17665	K 11	11	30
Permulsam.	4977	17665	K 12	11	30

#### Reversing Fingers.

Code Word.	No.	G. E. No.	Type of Controller.	No. to a Set.	Price Each.
	4978	14688	K	8	\$ 0 13
Permutabam.	4979	14688	K 2	8	13
Perneam.	4980	14688	K 10	8	13
Pernecabam.	4981	17667	K 11	8	17
Pernagatam.	4982	17667	K 12	16	17

### Ratchet Brake Handle.



THE working parts of the Brake Handle consist of top and bottom ratchet plates held in position by a compression spring. Its action is positive. It never slips and has no delicate parts to wear out.

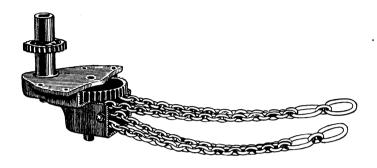
CODE WORD.	NO.				
Perludebam.	4963—Handle,	Bronze, Polis		SweepEach,	<b>\$</b> 6 10
Perluturam.	4964— "'	Mall. Iron, Nicke		" " ′	4 80
Permacebam.	4965—"	" " Japa	nned, 12 "	" "	3 10

# Canopy Motor Switch. For 500 Volt Circuit.



THIS Switch is made with a wide, positive break, and the contact blade, when thrown "on" or "off," is securely held in position so as to prevent it from jarring loose.

## Sterling Safety Brake.



THE Sterling Safety Brake has been on the market for seven years, and during that time has been installed on probably more cars than any other power brake made. It is smooth and positive in its action, and greatly multiplies the motorman's power to stop a car, by means of the gearing, which is shown in the above illustration. dition to the ordinary working chain, an auxiliary or safety chain is provided, which in case of the former breaking, will immediately come into play. The Brake will readily stop a car on any grade, and has been in successful use on cars weighing 25 tons each. chains do not coil up as in an ordinary brake, but are engaged by a double sprocket wheel, their links fitting into depressions thereon like a ball into a socket, and being released as the wheel turns round. The efficiency of the Brake has been proven in actual service on a number of the largest electric roads throughout the country.

CODE WORD.

NO.

Fabricatus.

8061—Safety Brake ...... Per Pair, \$ 70 00

#### Trailer Connector.



Disconnected.

THIS device is used to couple together the lighting circuit of motor and trailer cars. Being single pole and double break it renders it impossible to come in contact with the current when the Connector is uncoupled. A number of improvements have been made in the internal construction of the Connector to insure a perfect form of contact between the connecting parts. It is so constructed that by making a slight change in the connections, it can also be used as a double pole connector for headlights.

### Bell Cluster.



#### Polished Brass, Height 5 Inches.

CODE WORD.	NO.					
Appellabam.	1583—Cl	uster,	Three-Light	Each,	\$ 1	84
Appendam.	1584—	"	Four-Light	"	2	12
Appendebam.	1585—	"	Five-Light	"	2	42

Prices include Cluster only; Sockets, etc. extra.

## Ceiling Rosette.



#### Polished Brass, Height 4 Inches.

CODE WORD. NO.

Price includes Rosette only; Sockets, etc. extra.

#### Box Cluster.



Polished Brass, Height 10 1/2 Inches.

Price includes Cluster only; Sockets, etc. extra.

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## Tinned Steel Binding Wire.

The material from which this Wire is made is a special mixture of steel giving great tensile strength and elasticity.

Code Word.	No.	Diameter in Inches.	Nearest Size B. & S. Gauge.	Approx. No. Feet per Pound.	Price per Pound
Perrodebam.	5005	.028	21	462	\$ 0 25
Fabrimus.	8062	.032	20	366	25
Perrogabam.	5006	. 035	19	291	121/2
Fabriturus.	8063	.040	18	233	121/2
Perrogitam.	5007	.045	17	183	121/2
Fabrivimus.	8064	.051	16	146	121/2
Perrumpam.	5008	.057	15	115	121/2

## Brass Binding Wire.

Code Word.	No.	No. B. & S. Gauge.	Approx. No. Feet per Pound.	Price per Pound
Persecatam.	5014	21	431	<b>\$</b> 0 28
Facetus.	8065	20	342	27
Persentiam.	5015	19	271	27
Faciebamus.	8066	18	215	26
Persidam.	5016	17	171	26
Persistam.	5017	16	132	251/2
Persolutam.	5018	15	107	25 1/2

## Phosphor-Bronze Binding Wire.

Code Word	No.	No. B. & S. Gauge.	Approx. No. Feet per Pound.	Price per Pound.
Pertangam.	5024	21	407	<b>\$</b> 0 64
Facilibus.	8067	20	323	62
Pertegam.	5025	19	256	62
Facinus.	8068	18	203	61
Pertenebam.	5026	17	161	61
Pertepidam.	5027	16	127	60
Perticatam.	5028	15	101	60



### Pike Pole.

	V.D. Uo.	-
CODE WORD.  Attraxeram.	No. 1766—Length, 12 feet Each, \$ 1	L 70
Attremitam.	1767— " 14 " " 1	. 80
Attrepidam.	1768— " 16 " " 1	95

## Raising Fork.

#### For Wood Poles.



CODE WORD.	NO.		
Attractam.	1763—Lengtl	n, 12 feetEach	, \$ 2 30
Attraham.	1764 "	14 " "	2 55
Attrahebam.	1765— "	16 ""	2 75

## Raising Fork.

### For Iron Poles.



CODE WORD.	NO.					
Attondam.	1759—Lengt	h, 12	feetE	ach, 8	2 3	30
Attondebam.	1760 - "	14	"	"	2 5	55
Attorqueam.	1761—"	16	"	"	2 7	75

## Jenny Pole Support.



CODE WORD.
Attinebam.
Attinendam.

NO.				
1754—Length,	6	feetEach,	\$ 7	60
1755— ""	$7\frac{1}{2}$	feet	8	<b>75</b>

## Mule Pole Support.



CODE WORD.	NO.	Y	
Attinueram.	1756—Length,	4½ feet	.Each, \$ 4 65
Attollam.	1757— "	6 "	. " 5 85
Attolebam.	1758— "	7½ "	
Praepurgam.	5233—"	10 "	. " 14 50

### Cant Hook.



CODE WORD. NO.

## Swiveled Carrying Hook.



CODE WORD. NO.

## Pole Hole Auger.



CODE WORD. NO.

## Hercules Pole Hole Digger.



THE blades are made of the very best cast steel, properly tempered, and the castings of malleable iron, thoroughly annealed. Holes can be dug of any diameter, and as deep as the full length of the Digger.

CODE WORD.	NO.									
Attriveram.	1770—D	igger,	with	4	foot	Handle	e	.Each,	\$ 2 2	0
Attulam.	1771—	"	"	6	"	"		. "	25	0

## Pole Tamping Bar.



CODE WORD. NO.

Audituram. 1782—Hard Wood Handle, Steel Shod......Each, \$ 2 45

## Crow and Digging Bar.



CODE WORD. NO.

 Efforebam.
 2973—Octagon Steel, 1
 inch in diameter, 7 feet long.... Each, \$ 4 15

 Efforendam.
 2974—
 "
  $1\frac{1}{8}$  "
 "
 \*
 5 55

 Praepandam.
 5229—
 "
  $1\frac{1}{8}$  "
 "
 9
 "
 "
 6 50

10

## Tamping and Digging Bar.

		=
995		
_		

CODE WORD. NO. Effrenabam. 2975—Octagon Steel, 1 inch in diameter, 7 feet long...Each, \$ 4 40 Effricatam. 2976— " 1½" " " 8 " " ... " 5 65 Praeparam. 5230— " 1½" " " 9 " " ... " 6 30

## Track Tamping Bar.



CODE WORD. NO.

Praelegam. 5215—Length 5½ to 6 feet, Weight 12 to 14 pounds...Per Pound, \$ 0 13

### Claw Bar.



CODE WORD. NO.

Praeliatam. 5216—Length 5½ feet, Weight approximately 29

### Crow Bar.



#### No. 5232.

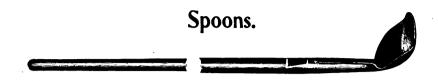
CODE WORD. NO.

Praepediam. 5231-Pinch Point, Length 5 feet, Weight approxi-

mately 20 pounds......Per Pound, \$ 0 10

Praeponam. 5232-Wedge Point, Length 5 feet, Weight approxi-

mately 20 pounds...... " "



THESE Spoons are strong and durable, as extra quality of materials and workmanship only are employed. The socket straps are heavy and are long enough to reinforce the handles.

CODE WORD.	NO.	
	1774—Spoon, with 7 foot HandleEach,	\$ 2 75
Auctandam.	1775— " 8 " " "	2 95
Factabamus.	8069—Handles, 7 feet longPer Dozen,	13 80
Factamus.	8070— " 8 " " … " " "	16 95

## Long Handled Shovels.



THE handle is fastened securely in the socket, which consists of two long, heavy iron straps almost encircling it. This arrangement makes it impossible to accidentally break the handle.

CODE WORD.	NO.	
Auctatam.	1776—Shovel, with 7 foot Handle	\$ 2 80
Auctorabam.	1777— " " 8 " " "	3 00
Factaturus.	8071—Handles, 7 feet long	10 85
Factavimus.	8072— " 8 " " " "	13 80

# Square Point Shovel. With Long Handle.



CODE WORD. NO

Factibus. 8073—Shovel, with 4 foot, 4 inch Handle......Each, \$ 1 25

## Square Point Shovel.

#### With "D" Handle.



CODE WORD. NO.

Praemuniam. 5227—Width of Blade, 9½ inches, Polished......Each, \$ 1 25

## Tamping Pick.



#### Solid Cast Steel, Adze Eye.

CODE WORD.  Praeluceam.	NO. 5218—Weight, 7 to 8 poundsEach,	\$ 1 58
Praeluebam.	5219— " 8 " 9 " "	1 67
Praelusam.	5220—Hickory Handles, 36 inches long Per Dozen.	6 40

## Railroad Pick.



#### Solid Cast Steel, Adze Eye.

CODE WORD.	NO.		
Praemixtam.	5223—Weight,	6 poundsEach	ı, \$ 1 08
Praemorsam.	5224—"	7 " "	1 17
Factitatus.	8074—"	8 " "	1 29
Praelusam.	5220-Hickory	Handles, 36 inches long Per Dozer	n. 6 40

## Track Chisel.



CODE WORD.	NO.
Falconibus.	8079—Chisel, Weight 3 to 5 poundsPer Pound, \$ 0 31
Falearibus.	8080—Split Hickory Handles, 36 inches long "Dozen, 2 25

## Railroad Maul.



CODE WORD.	NO.	
Factite mus.	8075—Maul, Weight 4 to 8 pounds Per Pound, \$ 0 2	0
Pressabam.	5261—Hickory Handles, 32 inches long "Dozen, 2 1	0

## Track Maul.



CODE WORD.	NO.
Falcarius.	8077—Maul, Weight 7 to 10 pounds Per Pound, \$ 0 2
Pressabam.	5261—Hickory Handles, 32 inches long "Dozen, 2 1

#### Track Wrench.



Code Word.	No.	Outside Diam. of Nut.	Size of Opening.	Extreme Length.	Weight Each.	Price Each.
Praefatam.	5208	1¼ in.	$1^{5}_{16}$ in.	30 in.	5 lbs. 5 oz.	\$ 0 92
Praeficiam.	5209	13/8 "	1,7 "	30 ''	5 " 7 "	92
Praefigam.	5210	1½ "	1,6 "	30 ''	5 " 9 "	92

### Rail Fork.



POR use in handling rails, particularly in unloading them from cars, this Fork is almost indispensable. It is made of solid cast steel.

CODE WORD. NO.

Praelautam. 5214—Fork, Weight 13 to 14 pounds......Per Pound, \$ 0 23

## Rail Tongs.



Solid Cast Steel.

CODE WORD. NO.

Praedamnam. 5203-Tongs, Weight approximately 22 pounds.....Per Pound, \$ 0 22

## Huntington Track Gauges.



#### With Guard Rail Attachment.

CODE WORD.	NO.						
Praediscam.	5204—T	rack	Gauge,	$Standard\dots\dots$		Each,	\$ 2 35
Praedoctam.	<b>5205</b> —	"	"	with Guard Rail	Attachment	"	3 95

# Combined Track Gauge and Level.



CODE WORD. NO.

Praefandam. 5207—Combined Track Gauge and Level......Each, \$ 5 60

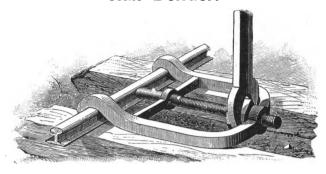
### Common Track Level.



CODE WORD. NO.

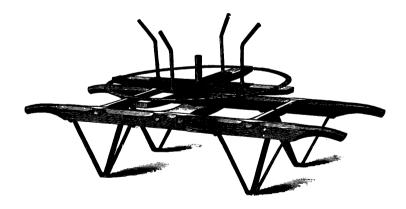
In ordering Track Gauges and Levels, if required for other than standard gauge of track (4 feet 8½ inches), specify same.

## Rail Bender.



CODE WORD.	NO.				•			
Fallamus.	8081—For	30 p	pound	Rai	l	Each,	\$ 39	85
Falsabamus.	8082—''	<b>55</b>	"	"		. "	45	20
Falsaturus.	8083—''	75	"	"		. "	53	15
Falsificus.	8084—"	100	4.6	"		. "	58	45

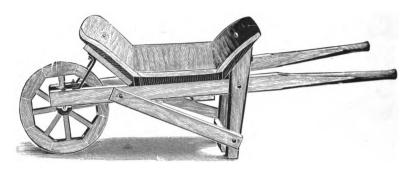
# Pay Out Reel.



Made in two forms, one being suitable for heavy feeder wires, and the other for telephone or light feeders.

CODE WORD.	NO.			
Pronectam.	5336—Reel for Railway Work E	ach,	\$ 17	50
Famatus.	8085— " Telephone "	"	14	00

#### Climax Bolted Wheelbarrow.



With Wood Wheel.



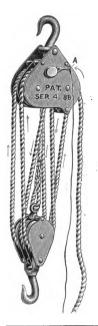
With Steel Wheel.

THE Climax Barrow is especially adapted for construction work, and has a full size tray which is bolted to the legs, and thoroughly bolted and braced in front. The handles and legs are of selected hard wood, and the latter is gained and bolted to handles. The wheels are painted.

CODE WORD. NO.

Famicibus. 8086—Wheelbarrow, with 16 in. Sectional Felloe Wheel. Each, \$ 3 20

Famulatus. 8087— " Steel Wheel..... " 3 40



## Sure Grip Tackle Block.

THE Sure Grip Steel Tackle Block will hold the load at any point without fastening the rope. The brake is simply a wedge that drops by gravity between the upper sheaves and is absolutely automatic in its action. The face of each sheave is fluted in such a manner that the rope is not worn more than by an ordinary block. It can be worked at any angle and the heavier the load the better the grip. The Blocks are made of steel and are light, durable and strong. They are made in two styles, viz., single and double reeved. The former has two sheaves in both top and bottom Blocks, and the latter has four sheaves in the top and three in the bottom Blocks respectively. In the following list Nos. 5355 to 5358 are single, and Nos. 5359 to 5361 are double reeved.

Code Word.	No.	Size of Manila Rope.	Lifting Power of One Man.	Working Capacity.	Price Each.
Proseveram.	5355	3/8 inch	300 lbs.	600 lbs.	\$ 3 00
Prosiliam.	5356	1/2 "	350 ''	1000 ''	5 50
Prosidiam.	5357	5% "	400 ''	1800 ''	7 00
Prospergam.	5358	34 "	450 ''	2500 ''	8 50
Prostabam.	5359	1/2 "	600 ''	3000 ''	10 00
Prosternam.	5360	5% "	700 ''	3500 ''	12 00
Prostratam.	5361	34 "	850 "	5000 ''	14 00

Price includes upper and lower Blocks, but not Rope.

## Manila Rope.

Code Word.	No.	Diameter. Inches.	Approx. No. Feet per Pound.	Price per Pound.
Prosubigam.	5362	3/8	21	\$ 0 31
Prosumam.	5363	1/2	13	30
Prosumptam.	5364	5/8	7½	30
Protegam.	5365	3/4	6	30
Protegebam.	5366	7/8	4	30
Protelabam.	5367	1	31/4	30

Full coils contain 1200 feet.

# Wood Tackle Blocks. With Inside Iron Straps and Loose Hooks.



Single With Hook and Becket.



Double
With Hook.

#### With Hook.

Code Word.	No.	Length of Shell.	Diameter of Rope.	Single Sheave.	Double Sheave.	Triple Sheave.
Propagabam.	5337	4 inches	½ inch	\$ 0 85	\$ 1 60	\$ 2 15
Propalatam.	5338	5 "	5% "	90	1 75	2 25
Propendam.	5339	6 "	34 "	1 10	2 00	2 90
Properabam.	5340	7 "	7/8 "	1 30	2 40	3 50
Propexuram.	5341	8 "	1 "	1 65	2 85	4 25

#### With Hook and Becket.

Code Word. N		Length of Shell.	Diameter of Rope.	Single Sheave.	Double Sheave.	Triple Sheave.
Prophetiam.	5342	4 inches	½ inch	\$ 0 85	\$ 1 60	\$ 2 15
Propinabam.	5343	5 "	5/8 "	90	1 75	2 25
Propinquam.	5344	<b>6</b> "	34 "	1 10	2 00	2 90
Propolluam.	5345	7 "	7/8 "	1 30	2 40	3 50
Proponam.	5346	8 ''	1 "	1 65	2 85	4 25

In telegraphing, where reference is desired to be made to the kind of Sheaves, use code word *Proponels am* for "Single," *Propriabam* for "Double," and *Propungam* for "Triple" Sheaves, placing it after the regular code word designating the size of the Block.

# Malleable Iron Tackle Blocks. With Roller Bushings.



Single With Hook and Becket.



Double With Hook.

#### With Hook.

Code Word.	No.	Length of Shell.	Diameter of Rope.	Single Sheave.	Double Sheave.	Triple Sheave.
Prorogabam.	5347	5 inches	⅓ inch	\$ 1 50	\$ 2 90	\$ 4 25
Proruam.	5348	6 "	3/4 ""	1 75	3 25	4 75
Proruebam.	5349	7 "	7/8 ''	2 10	3 85	5 80
Prorumpam.	5350	8 "	1 "	2 55	4 60	6 85

#### With Hook and Becket.

Code Word.	No.	Length of Shell.	Diameter of Rope.	Single Sheave.	Double Sheave.	Triple Sheave.
Proruperam.	5351	5 inches	⅓ inch	<b>\$ 1 50</b>	\$ 2 90	\$ 4 25
Proruptam.	5352	6 "	3/4 ''	1 75	3 25	4 75
Proruturam.	5353	7 "	7/8 ''	2 10	3 85	5 80
Prosariam.	5354	8 "	1 "	2 55	4 60	6 85

In telegraphing, where reference is desired to be made to the kind of Sheaves, use code word *Prosecabam* for "Single," *Prosentiam* for "Double," and *Proserpam* for "Triple" Sheaves, placing it after the regular code word designating the size of the Block.

## **Broad Hatchet.**



#### Best Cast Steel, Bronzed and Polished.

CODE WORD.	NO.							
Farcinamus.	8088—H	atchet,	4 1/2	inch	Cut.		Each,	\$ 0 96
Priscam.	5266-	44	5	"	".	• • • • • • • • • • • • • • • • • • • •	"	1 08
Pristinam.	5267—	"	6	"	".		"	1 38
Priusquam.	5268—	4.6	7	"	".		"	1 63

## Handled Axe.



#### Best Cast Steel, Bronzed and Polished.

CODE WORD.	NO.	
Privabam.	5269—Axe, Weight approximately 4 poundsEach, \$ 1	70

#### Railroad Adze.



CODE WORD.	NO.	
Prensatam.	5260—Adze, 6 inch CutEach,	\$ 2 70
Pressabam.	5261- Hickory Handles, 32 inches long Per Dozen,	2 10

#### Ball Pein Hammer.



THIS Hammer has an oil finish, with polished sides, face and pein. The weights given in the following list are for the Hammers without handles; prices are for the complete Hammers.

CODE WORD.	NO.							
Privaveram.	5270—H	ammer,	Weight	: 1	pound		.Each,	\$ 1 04
Proaviam.	5271—	"	"	1¼	"		. "	1 13
Probabam.	5272	"	"	1½	"	***************************************	. "	1 21
Farcire mus.	8089	"	"	2	"		. "	1 38
Farionibus.	8090	44	""	2½	"		. "	1 58

# Riveting Hammer.



I N the following list the weights given are for the Hammers without handles; prices being for the complete Hammers.

CODE WORD.	NO.									
Farraceus.	8091—H	ammer,	Weight	11/8	pounds	 	 	.Each,	\$ 1	00
Farrarius.	8092—	"	"	1%	"	 	 	. "	1	08
Farratus.	8093—	"	"	2	"	 	 	. "	1	17
Farseramus.	8094	4.6	"	21/2	"	 	 	. "	1	25



# Adze Eye Nail Hammer.



The weights given in the price list are for the Hammers without handles; the prices are for the complete Hammers.

CODE WORD.	NO.				
Probaturam.	5274—Hammer,	Weight 1	pound	Each,	\$ 0 71
Probaveram.	5275— "	" 1½	<b>, "</b>	"	75

# Socket Framing Chisel.



CODE WORD.	NO.							
Pransuram.	5255—0	Chisel,	1½	inch	Blade	Each,	\$ 1	67
Prasinatam	5256	"	2	66	66	44	2	00

# Drawing Knife.



#### Made from best Cast Steel and Norway Iron.

CODE WORD.  Precaturam.		rawing	Knife,	10	inch	Blade	 	. <b></b>	 . Each,	\$ 1	35
Prehendam.	5258—	"	"	12	"	44	 		 . "	1	45
Prensandam.	5259—	44	66	14	"	44	 		 . "	1	70

## Champion Screw Driver.



THE Champion Screw Driver is intended especially for heavy work and hard usage. The blade, which is forged from the toughest grade of steel, is so mounted in the handle as to not work loose.

CODE WORD.	NO.									
Procaciam.	5276—I	engt	h of	Blade,	3	inche	es	Each,	\$ 0 2	9
Procandam.	5277	"	"	"	5	"		"	4	2
Procatam.	5278—	66	"	"	6	"		"	5	C
Procedam.	<b>5279</b> —	"	"	"	8	"		"	6	7
Procidebam.	<b>5280</b> —	"	"	"	10	"		"	8	3
Procingam.	5281—	"	"	"	12	"		"	1 0	C

#### Acme Screw Driver.



#### Solid Cast Steel Forged Blade.

CODE WORD.	NO.								
Farsimus.	8095—L	engtl	n of	Blade,	3	inche	es	Each,	\$ 0 21
Fascine mus.	8096	"	"	"	4	"		. "	25
Fassurus.	8097	"	"	"	5	"		. "	29
${\it Fastigatus}.$	8098	"	"	"	6	"		"	33
Fatuatus.	8099—	"	"	"	8	"		"	46
Faveremus.	8100—	"	"	"	10	"		"	58
Favoribus.	8101	"	"	"	12	"		"	75

## Changeable Gear Breast Drill.



THIS Drill is furnished with a double driving gear, by means of which it can be speeded either three to one, or even. The gears are cut from solid metal, the driving gear being 5 inches in diameter. A roller is placed at the back of driving gear which makes it equally as firm and substantial as a double geared drill.

The crank is adjustable to three different lengths and is held in place by a round head thumb-screw, and the driving gear is held by a similar screw. The chuck is furnished with alligator jaws suitable for either square or straight shank drills, and will hold sizes from  ${}_{6}^{5}$ 4 to  ${}_{3}^{8}$ 8 of an inch inclusive. The level attachment enables the operator to see if drill is held true.

See page 537 for list of Twist Drills.

## Improved Ratchet Brace.



THE sweep of this Brace is made of polished steel and the jaws are of the alligator type. All parts of the Brace are made for durability.

 CODE WORD.
 NO.

 Praerasam.
 5235— 8 inch Sweep.
 Each, \$ 1 42

 Praerigeam.
 5236—10 " " 1 50

# Standard Auger Bits.

#### Jennings Pattern.



#### Length of Twist 3½ to 4 Inches.

CODE WORD.	NO.							
Praesensam.	5239— ¼	inch	in	diameter		Per	Dozen,	\$ 3 50
Praeseptam.	5240— 5	"	"	4.6		"	"	3 50
Praesiliam.	5241— 3/8	"	"	"		"	"	3 75
Praestruam.	5242— ½	"	"	"			"	4 00
Prae sultam.	<b>5243</b> — 5/8	"	"	"		"	"	4 50
Praesungam.	5244— ¾	"	"	"		"	"	5 50
Praetangam.	5245- 1/8	"	"	"		"	"	6 50
Praetendam.	5246 - 1	"	"	"	• • • • • • • • • • • • • • • • • • • •	"	4.6	8 00

## Car Bits.



#### Length of Twist 12 Inches.

CODE WORD. Febribus.		inch i	n diamete	er	Per	Dozen,	<b>\$</b> 7 50
Febriendus.	8103 - ½	"			. "	"	10 25
Februamus.	8104— 5/8	"			. "	"	12 75
Fecundamus.	8105— ¾	" "			"	"	15 50
Fefellimus.	8106— 1/8	" "			. "	"	17 75
Felicibus.	8107-1	"				"	20 50

### Cross Cut Hand Saw.



CODE WORD.

NO.

Praevideam.

Praevulsam.

3 35

## Duplex Pruning Saw.



CODE WORD.

NO.

Prandebam.

## Compass Saw.



The blade of this Saw is of blued cast steel, and the handle of black walnut.

CODE WORD.

NO.

Felimus.

# Tree Trimmer.



CODE WORD.	NO.	
Feliturus.	8109—Tree Trimmer, Overall Length 21 inches Each,	\$ 4 40
Fetatus.	8141—Handle, 18 feet long "	1 50

# Machinist's Wrench. Extra Heavy.



CODE WORD.	NO.								
Projiciam.	5311—L	engt	h 8	inches,	open	s 1 ¼	inches	 Each,	\$ 0 84
Prolapsam.	5312 -	"	10	4.6	"	1 3/4	"	 . "	1 00
Prolatabam.	5313	"	12	4.4	"	21/8	"	 . "	1 17
Prolegatam.	5314—	"	15	"	"	2¾	66	 . "	2 00
Prolevabam.	5315-	4.6	18	"	66	31/8	"	 . "	2 50

# Lag Screw Wrench.



The slot in this Wrench is tapered so that it will fit the head of any size of lag screw.

## Combination Lag Screw and Nut Wrench.



Will fit 3%, ½ and 5% inch lag screws, and nuts for 3%, ½ and 5% inch bolts.

CODE WORD. NO.

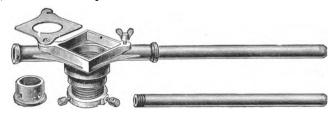
Avehendam. 1800—Lag Screw and Nut Wrench......Each, \$ 2 50

## Stillson's Pipe Wrench.



CODE WORD. NO. Felivimus. 8110-Length 10 inches, for 1 inch and smaller Pipe...Each, \$ 2 25 " 1½ " Prolexeram. 5316-3 00 " 2 Prolibabam. 4 00 5317---18 " 2½ " Prolicebam. 6 00 5318-

## Pipe Stock and Dies.



CODE WORD. NO.

Fellabamus.

8111-Pipe Stock, with 3 Dies and Bushings for

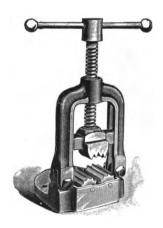
1¼, 1½ and 2 inch Pipe ......Per Set, \$ 20 00

## Roller Pipe Cutter.



CODE WORD,	NO.		
Prolixatam.	5319—Cuts Pipe	1/2 to 2 inches in diameter	Each, \$ 6 75
Prolongam.	5320 " "	11/4 " 3 " " " "	" 16 00

# Pipe Vise.



THIS Vise is equipped with roller jaws which afford a sure grip.

They will not mar the pipe and will outlast three or four sets of V jaws. The frame is made of heavy malleable iron.

CODE WORD. NO.

Proluceam. 5321—Holds Pipe ½ to 2 inches in diameter ...... Each, \$ 4 00

#### Cold Chisels.



CODE WORD.	· NO.						
Fellamus.	8112-Size	of	Steel	1/2	inch	Each, \$	0 55
Fellaremus.	8113—"	"	"	5∕8	4.6		71
Fellaturus.	8114—"	"	"	3/4	"		95
Fellicatus.	8115—"	"	"	7/8	4 6		1 37

#### Bench Vise.



THIS Vise is substantially constructed throughout, and made of the best materials. It is equally suitable for use on the repair car or in the shop, as it can be used either as a stationary or swiveled base vise on account of not having any projections underneath to interfere with the edge of the bench to which it is fastened.

CODE WORD.	NO.												
Fellice mus.	8116—W	<b>Vidth</b>	of	Jaws	3	inches,	opens	4	inches		Each,	<b>\$</b> 6	00
Fellitamus.	8117—	"	"	44	4	"	"	6	44	· • · · · · · • · •		10	00

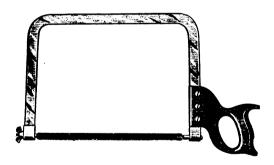
## Regular Hack Saw.



THIS is made with a strong, solid steel frame, highly polished and heavily nickel plated, to hold 8 inch blades only. The blades can be adjusted to face in four different directions, and the tension on them is secured by simply turning the thumb-screw shown in the illustration above.

CODE WORD.	NO.		
Feminatus.	8118—Frame Each,	\$ 1	. 00
Praevectam.	5250—Blades, 8 inches longPer Dozen,		65

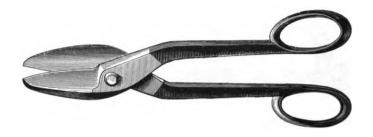
## Large Hack Saw.



THE Frame of this Saw is made extra deep and strong for large and heavy work, and is adapted particularly for sawing rails. Requires a 12 inch blade.

CODE WORD.	NO.	
Praeteram.	5247—Frame Each,	\$ 2 45
Praetextam.	5248—Blades, 12 inches longPer Dozen,	2 10

#### Hand Shears.



CODE WORD.	NO.									
Fenarius.	8119—L	ength	of	Cut	3	inches	 Each,	\$ ]	1 50	)
Fendabamus.	8120—	"	"	"	3½	"	 "	2	2 00	)
Fendimus.	8121—	"	"	"	4	44	 "	2	2 50	)

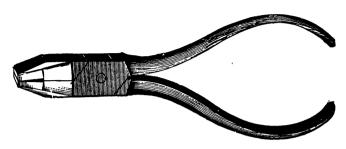
## Porter's Bolt Clippers.



THESE Clippers will be found extremely useful for heavy cutting of all kinds, particularly bolts, copper wire, steel wire strand, etc., where they will quickly pay for themselves in the time saved by their use.

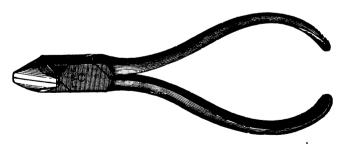
CODE WORD.	NO.										
Professam.	5297—	Length	24	inches,	for	3∕8	inch	Bolts	 Each,	<b>\$</b> 5	00
Profindam.	5298—	"	<b>3</b> 0	"	"	1/2	"	"	 "	7	00
Proflabam.	5299	"	36	""	**	5⁄8	"		 . "	9	00

# All Steel Side Cutting Pliers.



CODE WORD.	NO.			
Aurigabam.	1793—5 inch	, Plain	Each,	\$ 0 54
Procubitam.	5285—5 "	Nickel Plated	"	77
Auseram.	1794—6 "	Plain	"	69
Procumbam.	5286—6 ''	Nickel Plated	"	94
Auspicabam.	1795—7 "	Plain	"	1 08
Prodegeram.	5287—7 ''	Nickel Plated	"	1 38
Autumabam.	1796—8 "	Plain	"	1 50
Prodictam.	<b>5288</b> —8 "	Nickel Plated	"	1 83
Prodigam.	5289—9 "	Plain	"	1 83
Prodigebam.	5290-9 ''	Nickel Plated	"	2 10

# Diagonal Cutting Nippers.



CODE WORD.	NO.			
Prodituram.	5291-4 inch,	Plain	Each,	<b>\$</b> 0 <b>6</b> 3
Prodormiam.	5292-4 "	Nickel Plated	. "	83
Produce bam.	5293—6 "	Plain	"	79
Produxeram.	5294—6 ''	Nickel Plated	"	98

## Insulated Side Cutting Pliers.



The handles of these Pliers are protected with a heavy covering of insulation moulded over them.

CODE WORD,				
Procludam.	5282—6 inch	Each,	\$ 2	08
Procragam.	5283—7 "	"	2	75
Procubabam.	5284—8 "	"	3	33

## Splicing Clamps.



#### No. 1791.

CODE WORD.	NO.									
Aurabam.	1791—2 I	Ioles,	for	Nos.	0 and 2 B.	& S. W	Vires .	<b></b> .	Each,	\$ 3 20
Auraturam.	1792-4	66	"	"	2, 4, 6 a	nd 8B	. & S.	Wires	. "	3 20
Profringam.	5302 - 4	"	"	66	8, 10, 12	" 14	"	"	. "	3 20

## Combination Splicing Clamp.



THIS Clamp is especially adapted for the Telephone Twist Connector listed on page 271; the double holes in the Clamp corresponding to the several sizes of these Connectors. These Clamps may also be used in making ordinary twist joints, and are provided for this purpose with holes to take Nos. 8, 10, 12 and 14 B. & S. Wires.

## All Steel Gas Pliers.



CODE WORD.	NO.			
Augurabam.	1789— 8 inch	Each,	\$ 1	00
Profluam.	5300—10 "	"	1	25
Profluebam.	5301—12 "	"	1	50
Fenebribus.	8122—14 "	"	2	00

# Lineman's Safety Belt.



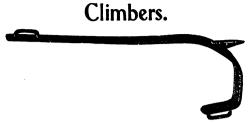
For strapping to pole or cross arm.

CODE WORD.	NO.		
Profugam.	5304—Safety	BeltEach,	\$ 2 30

## Lineman's Tool Belt.

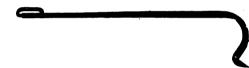


CODE WORD.	NO.	
Progeneram.	5305—Tool BeltEach, \$ 1	1 50



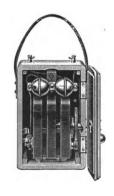
CODE WORD.	NO.				
Progignam.	5308—Eastern Pattern, Klein's	.Per	Pair,	\$ 3 60	)
Aufidiam.	1785— " Standard	. "	"	2 60	)
Aufugiebam.	1786—Straps, extra	. "	Set,	1 50	)

## Climbers.



CODE WORD.	NO.			
Progrediam.	5309—Western Pattern, Klein's	. Per	Pair,	\$ 3 20
Augeam.	1787— " Standard	. "	66	2 20
Augescam.	1788—Straps, extra	. "	Set,	1 50

## Testing Generators.



THESE are built in a very substantial manner especially for linemen's use and are furnished with a carrying strap. Each instrument is guaranteed to ring through the resistance for which it is made.

CODE WORD.	NO.						
Prolueram.	5323—Ge	nerator,	10,000	Ohms	S	Each,	\$ 7 00
Prolusuram.	5324—	"	25,000	"		"	8 00
Promendam.	5325—	66	50,000	66		"	10 00

#### Haven's Wire Eccentric.



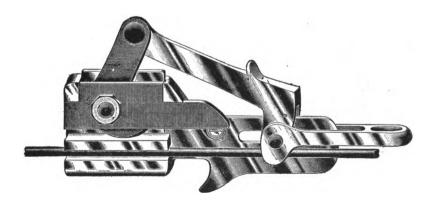
CODE WORD.

Prominatam. Avecturam.

5328-For No. 8 B. & S. and smaller diameters of Wire.. Each, \$ 3 00 1799- " ½ inch

### Klein's Wire Eccentric.

#### For Round and Grooved Wires.



For hard drawn copper trolley wire; will not nick or cut it.

CODE WORD.

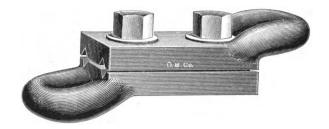
NO.

Avaram.

1798—For Nos. 4 to 3-0 B. & S. Wire.......................... Each, \$ 10 00

## Trolley Wire Screw Clamp.

For Round, Figure 8 and Grooved Wires.



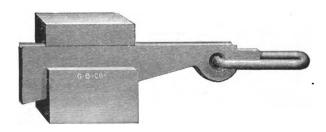
M AY be used either as a permanent or temporary clamp interchangeably with Round, Figure 8 and Grooved Wires, from Nos. 0 to 4-0 B. & S. gauges inclusive.

CODE WORD. NO.

Prominebam. 5329—Screw Clamp......Each, \$ 0 90

## Trolley Wire Wedge Clamp.

For Round, Figure 8 and Grooved Wires.



THIS Clamp secures a very powerful grip on the wire, as the greater the strain, the greater is the gripping effect of the Clamp. The grip of the Clamp on the wire is so positive that it can be released only by striking the small end of the wedge with a hammer.

CODE WORD. NO.

Feralibus. 8125—Wedge Clamp.................................. Each, \$ 4 60

#### Lineman's Vise.



CODE WORD. NO.

Promerebam. 5326—Vise, Length 6 inches......Each, \$ 2 50

## Jack Strap.

For use with vises, eccentrics, come-alongs, etc.

CODE WORD. NO.

# Trolley Wire Tightener.

For Round, Figure 8 and Grooved Wires.

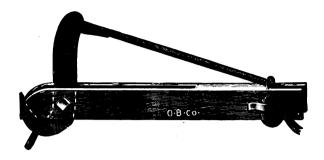


THIS tool may be used interchangeably with Round, Figure 8 and Grooved Wires of Nos. 0 to 4-0 B. & S. gauges inclusive. As the above illustration shows, it is intended to facilitate the splicing of adjacent sections of trolley wire.

CODE WORD. NO.

Ferbuinus. 8126—Tightener ...... Each, \$ 7 70

## Trolley Wire Pick Up.

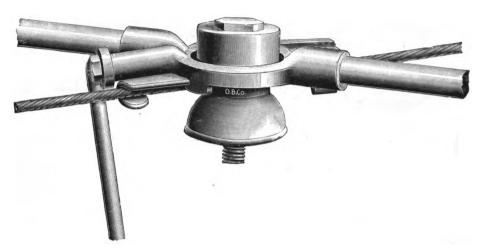


S its name indicates, this device is designed for picking up the trolley wire, particularly broken ends of the latter, which would otherwise interfere with the passage of cars. By means of this Tool a live trolley wire may be handled without danger of receiving a shock, as the only metal part in contact with the wire is the movable jaw of The end of the latter is pointed, to enable it to readily pick the tongs. up a wire lying directly on the ground. After the wire has been picked up by means of the tongs, the rope is drawn up tight until the tongs securely grip the wire, after which the rope may be fastened by passing it through the groove and under the hook at the end of the handle, thereby securing the Pick Up to the wire. The loose end of the rope may then be thrown over the limb of a tree or other support, and the wire drawn up from the ground until it is entirely out of the way The Trolley Wire Pick Up is very substantially constructed, of danger. the handle being made of selected oak and the end casting of malleable Each Pick Up is supplied with 50 feet of 3/8 inch rope, and when not in use this may be wound tightly around the tongs, so that the device will occupy but a small space, and can readily be placed under a car seat or other convenient place, as desired.

CODE WORD. NO.

## Throw In Hanger Wrench.

#### For Trolley Wire Hangers.

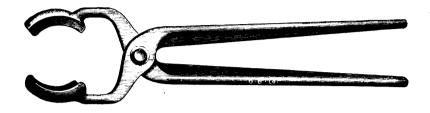


THIS is designed for placing trolley wire hangers in position on the span or suspension wire, while the latter is under tension. The hanger is first placed on the span wire with the latter through the lips of one of the suspension arms and around one side of the body of the hanger. The Wrench is then placed over the hanger so that the lugs projecting below the central portion of it will engage with the suspension arms of the hanger, after which the handles of the Wrench are brought around parallel to the span wire, thus bringing the hanger in position. The Wrench is then held firmly while the throw in lever is brought forward and upward, bringing with it the span wire until the latter rests in the remaining suspension arm of the hanger.

The Throw In Hanger Wrench is made in several styles adapted to the Types W, G, D, E, M, N, N-W, J and L Hangers respectively. The body of it is of malleable iron and the handles and lever of steel.

GODD WODD	110											
CODE WORD.	NO.											
Fustigabam.	3198—T	'hrov	w In 1	Hanger	Wrench	for	Туре	$\mathbf{W}$ H	[ange	rsI	Each,	\$ 2 00
Ferentibus.	8128	"	"	"	"	"	"	G	í í		44	2 05
Futue bam.	3199	"			٤.		"	D	"		"	2 50
Feriamus.	8129	"		4.6		"	4.6	$\mathbf{E}$	4.6		66	2 60
Gabiniam.	3200	"	4.6	"	4.4		"	M	"		"	2 50
Scriptam.	5752—	4.4	4.6		4.4	"	4.6	N	"		"	2 60
Scriptam.	5752-	٠.	"			• •	"	N-W	<i>"</i>		"	2 60
Ferociamus.	8130	• 6	"				4.6	J			"	2 10
Ferocibus.	8131-	••	"	. 6	4.4	"	"	L	4.6		66	2 05

# Cap and Cone Hanger Wrench. For Types W and G Hangers.



THIS Wrench is intended for use in tightening the caps on hangers of the cap and cone form, while putting them up on the line. It is particularly adapted to the Types W and G Hangers illustrated in this catalogue, and its construction is such that it can be used with any of the various forms of these hangers. By means of this Wrench the cap of the hanger can be rigidly held while the ear or clamp is screwed tightly into place.

# Stripping Tool. For Trolley Ears.

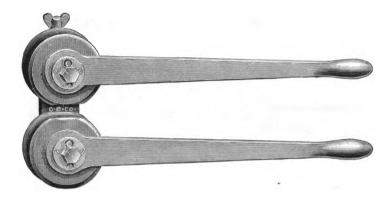


THIS Tool is designed to facilitate removing ears from the trolley wire, and is particularly adapted for the various forms of Clinch Ears for round wire illustrated in this catalogue. The pointed end of the Tool is placed between the lips of the ear and the trolley wire, after which a few blows of a hammer on the end of the Tool will open the lips sufficiently to strip the ear from the wire.

CODE WORD. NO.

Fenerandus. 8123—Stripping Tool for Round Wire.....Each, \$ 2 40

## Clinch Ear Clamping Tool.



By means of this Tool the work of installing ears of the "clinch" type can be done more satisfactorily and in much less time than by any other method. It is designed for closing the lips of the ear around the trolley wire. This is accomplished by means of the rollers on each side, which are grooved to fit the lips of the ear and close the latter tightly against the wire. The rollers are operated by means of two handles, as shown in the above illustration, and the work of installing ears with this device is very quickly and easily accomplished. The Clamping Tool may be used with Clinch and Metropolitan Ears for Round, and Soldered and Clinch Ears for Figure 8 Wire.

CODE WORD.	NO.														
Fervidus.	8133—7	Tool	for	Nos	. 0	and	l 2-0	В. &	S.	Round	Wire	<b></b>	. Each,	\$ 5	06
Ferviturus.	8134—										"		. "	5	06
Fervoribus.	8135	"	"	"	0	"	2-0	"		Fig. 8	"		. "	5	06
Festinamus.	8136—	"	"	"	3-0	"	4-0	"		%	"		. "	5	06

## Grooved Soldering Copper.



Grooved on lower face to solder ears on trolley wire.

## Trolley Terminal Clamp.

#### For Round and Grooved Wires.



THIS Clamp is arranged for anchoring the end of the trolley wire. It is made of bronze in halves, which are clamped together by means of steel screws. The inside of the Clamp and the outer edge of one end are grooved for the reception of the trolley wire.

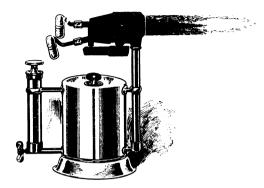
CODE WORD.	NO.												
Galbulam.	3203—Te	erminal	${\bf Clamp}$	for	No.	0	B. & S.	Round	Wire	.Each,	\$ :	1 (	60
Promittam.	5331—	"	"	"	"	2-0	44	"	" .	. "	;	1 (	60
Galeabam.	3204	"	"	"	"	3-0	. "	"	" .	. "	:	1 9	95
Promove bam.	5332—	**	• •	"	"	4-0	46	"	" .	. "		1 9	95
Promptabam.	5333—	**	• •		44	2–0	"	Groove	<b>d"</b> .	. "	;	1 (	60
Prompturam.	5334—	"	• 6	• •	"	3–0	"	"	" .	. "	J	1 9	95
Pronatabam.	5335	"	• •			4-0	"		••	. "	1	1 9	95

## Pointed Soldering Copper.



CODE WORD.	NO.												
Protensam.	5368—V	Veigh	t per	pair	, 2 p	oound	ls	 	Per	Pair,	\$ 1	1 3	0
Proterviam.	5369—	"	"	44	4	"		 	"	"	2	2 3	5
Protollam.	5370—	"	"		6	"		 		"	8	3 5	0
Protonabam.	5371V	Vood	Hand	lles .			<b></b>	 	• •			0	6

## Turner Double Jet Blow Torch.



Capacity One Quart.

THIS Torch is unequaled for heavy soldering, tempering, melting, heating or brazing, and is particularly suitable for outside work in windy weather. One of the jets regulates the flow of gas and the other the air mixture, so that a very intense heat can be produced at will.

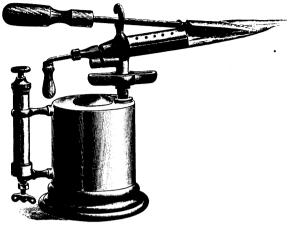
CODE WORD. NO. Festinibus. 8137—Torch ..... Each, \$ 5 00

# King Blow Torch.



Capacity One Quart.

#### Combination Blow Torch.



Capacity One Quart.

A very convenient tool for electrical work, as it combines soldering iron heater and blow torch in one. Every Torch fully guaranteed.

CODE WORD.
Protrudam.

NO. 5373---Torch ....

.....Each, \$ 5 50

#### Gem Alcohol Blow Torch.



Capacity One-Fourth Pint.

M ADE of polished brass, nickel plated, and furnished with a metal cap to prevent evaporation. Can be readily carried in pocket or small grip.

CODE WORD.

Protutelam.

NO.

5374—Torch ...... Each, \$ 2 00

# Charcoal Soldering Furnace.



The top of this Furnace is fitted for a 6 inch round iron soldering pot.

### Combination Furnace.

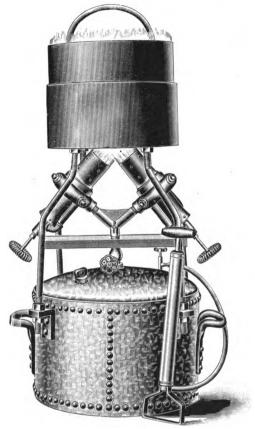


Capacity One Gallon.

Can be used equally well for soldering iron, or pot and ladle.

CODE WORD.	NO.	
Efutitam.	2987—FurnaceEach,	\$ 9 00
Effutue $bam$ .	2988—Solder Pot, 4 inches in diameter "	45
Egelabam.	2989— " Ladle, 3 " " ""	36

# Giant Portable Melting Furnace.

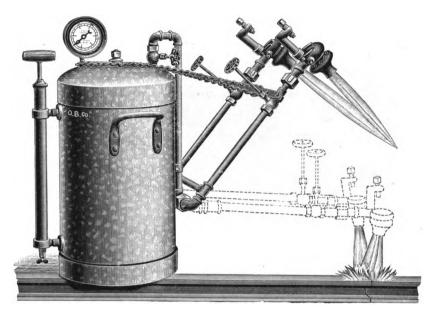


Capacity Ten Gallons.

THIS Furnace will be found extremely useful in making soldered connections in heavy feeder wires or cables, especially where it is desired to dip the connector or splice in melted solder in order to secure a sweated joint. Its construction throughout is very substantial, enabling it to withstand the severe usage to which articles of this kind are usually subjected. It will melt 200 pounds of metal in 18 minutes, and consumes about one gallon of oil per hour. A melting pot is not included as part of the Furnace, but will be furnished when so ordered at an additional price. Each Furnace is supplied with a torch to heat the burners.

CODE WORD.	NO.			
Festivus.	8138—Furnace for Kerosene Oil	Each,	\$ 85 00	
Fesulanus.	8139— " Gasoline		75 00	
Provincam.		. "	4 00	
Fet antibus.	814013½ " "		6 50	

#### Rail Joint Heater.



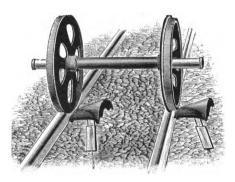
Capacity Ten Gallons.

THE purpose of this apparatus is to prepare the rail ends for electric welding by heating them red hot and thus removing all traces of moisture and corrosion. The reservoir is a ten gallon tank which is thoroughly brazed throughout and tested at a pressure of 200 pounds per square inch. Two powerful kerosene oil burners are furnished, which are flexibly connected to the tank by means of a swivel pipe joint, so that the burners may be readily adjusted either up or down to suit the work in hand; or when not in use may be raised to an upright position for convenience in handling. The consumption of oil is about one-half gallon per hour, and the heat generated is sufficient to make the rail ends red hot in 12 minutes. Each Heater is supplied with a torch to heat the burners.

CODE WORD. NO.

Provisuram. 5380—Heater......Each, \$ 60 00

#### Tilden Car-Replacing Frogs.

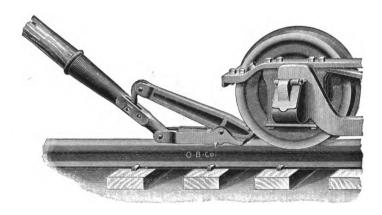


Y means of these Frogs, any derailed car may be quickly and easily replaced on the rails. The wheels of the car are run over the Frogs until they rest upon the top surface of the latter, when the weight of the car will cause it to readily slide into place on the rails. A means of electrical connection between the rails and the car wheels, when displaced from the former, is provided by contact pieces flexibly connected to the Frogs, and which can be placed underneath the car wheels before the latter come in contact with the Frogs. These Frogs are suitable for use with either flat, tee or girder rails, and when used with tee or girder rails, or where there is a difference of several inches in height between the top of the rails and the surrounding ground or rail ties, as the case may be, the Frogs should be placed on short pieces of heavy plank, sufficiently thick to bring the bottom of the Frogs in the same plane as the top of the rails. The Frogs weigh only 50 pounds per pair, and are sufficiently portable to be readily carried under the seat of a car, if desired.

CODE WORD. NO.

Punctatam. 5415—Replacing Frogs......Per Pair, \$ 20 00

#### Hercules Car Mover.



THE Hercules Car Mover is simple in construction and contains nothing liable to break or get out of order. As it operates on the principle of a compound lever, it is extremely powerful, and will move a car with greater speed and less effort than any similar device on the market. The handle is raised higher than on other movers, so that it is not necessary to bend over while using it, which makes it an easy bar to handle where considerable moving is done. The power of the Mover can be considerably increased by changing the connecting piece in the main lever from the upper to the lower hole, which will adapt it for moving extra heavy cars. The lower side of the device is provided with a small wheel, enabling the Mover to be easily pushed along after the car; and a triangular steel spur, with sharp corners, by means of which a purchase is secured on the rail. When the spur becomes dull from continued use, it can be removed and turned over, presenting a sharp edge to the rail. By means of this Mover one man can easily move a loaded car up grade. Weight 18 pounds.

CODE WORD. NO.

#### Motor Armature Lift.

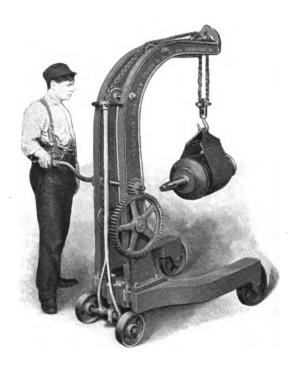


THIS device, an improved form of which is illustrated above, is a useful tool for the rapid handling of motor armatures, either for removing and transferring them from the motor frame or replacing them in position again. It is constructed entirely of iron and steel, and the truck is provided with either flat or flanged wheels, as desired, the latter arranged for a track of 24 inch gauge; unless otherwise specified, flat wheels are furnished. A side adjustment is provided, which enables it to be operated in many places otherwise inaccessible. The Jack is of the most approved form, and as regularly furnished, is supplied with a cradle top having wood rolls, but a flat, or special top can be furnished to order. This device is light, substantial and easily handled, and will safely carry a load of three tons. It is intended especially for use in the motor pit, and is made to suit any depth of pit. The dimensions for a pit approximately four feet deep are as follows:—

Code Word.	No.	Width.	Length.	Height with Bar Down.	Total Rise Bar.	Side Adjustment.	Price Each.
		Inches.	Inches	Inches.	Inches.	Inches.	
Facturus.	8076	29	33	36	24	6	\$ 75 00

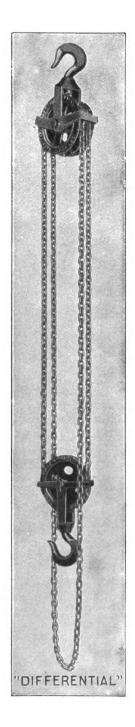
In ordering Motor Armature Lifts state style of wheels and top required.





THE Portable Crane illustrated in the above cut is designed especially for handling motor armatures and similar apparatus around the shop or car barn. Its construction throughout is of the most substantial character, the relations of the various parts being such as to insure the proper distribution of the weight, and to maintain a perfect equilibrium under all variations of load up to the full capacity of the machine. Being extremely portable, it can be readily moved from place to place as the work requires, and may be used in many places entirely inaccessible to an overhead crane or hoist.

Code Word.	No.	Capacity.	Height Crane will Hoist. Feet & Inches.	Width of Base Inside. Feet & Inches.	Width of Base Overall. Feet & Inches.	Price Each.
Fibratus.	8142	1½	5′3″	2' ½"	2′8″	\$ 100 00
Fibulandus.	8143	2	6 ' 3 "	$\overline{2}$ ' $2\frac{7}{2}$ "	2'10"	112 50
Fibulatus.	8144	2½	7'3"	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	3′2″	125 00
Fibulemus. Ficarius.	8145 8146	3 3	8'4"	3'11'/2"	4' 2½" 4' 6½"	150 00 175 00
Fictoribus.	8147	3	11'8"	4' 3½"	4'10½"	200 00

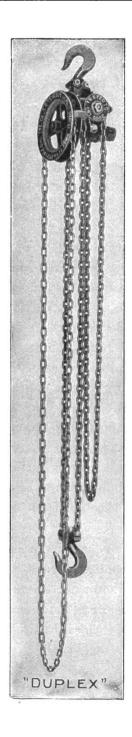


#### Differential Chain Block.

THIS is a simple, cheap and safe type of Chain Block, and has the fewest parts of any block made. The chain used in connection with the Block is made by a patented process which hardens the material, raises its elastic limit, and insures accurate fitting of the chain in the sheaves, thus lessening the tendency of the chain to stretch when overloaded. In this way long service is obtained before it loses the accurate adjustment without which rapid wear occurs. Durability and smooth working of the Differential Chain Block is further increased by the size of the sheaves, and the careful formation of their teeth to gear correctly with the chain. load is always automatically sustained, as the difference in diameter of the double upper sheaves, which have one more pocket on one side than the other, is too small to overbalance the friction of the parts.

The Differential Chain Block operates at a relatively higher speed than either the Duplex or Triplex Blocks described on the following pages, and consequently requires more power to operate it. For light loads its relative economy is high, and this, together with its low first cost, recommends it for use where efficiency is not a prime factor.

For list of Differential Chain Blocks see page 525.



### Duplex Chain Block.

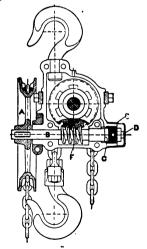
Screw = Geared Type.

THE Duplex Chain Block has an efficiency at least 25 per cent higher than that of any screw hoist of similar design at present on the market, and it is correspondingly faster and more powerful.

Its leverage or power is obtained by a worm gear of improved design, running in oil in an oil-tight casing, which insures perfect lubrication and the exclusion of dust.

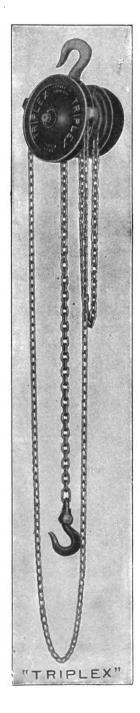
The Duplex Block occupies less head-room than any other, and its lightness, combined with durability and safety, makes it the hand-iest for shifting about for general use. One man can lift the heaviest load, and in speed and efficiency it stands next to the Triplex Block illustrated on page 524.

A convertible arrangement is provided whereby dispatch, or free lowering, may be obtained by removing the cap E (see sectional view), and reversing the friction plug D, so that its smaller end will take the thrust of the worm shaft.



Sectional View.

For list of Duplex Chain Blocks see page 525.



# Triplex Chain Block. Spur = Geared Type.

THE great saving of time and labor effected by the Triplex Block is accomplished by separating the sustaining mechanism from the hoisting gear, so that the operator is not wasting the larger part of his effort in overcoming friction.

The hoisting mechanism consists of a direct train of spur gears from the small pinion on the central shaft to the internal gear wheel cast within the main frame. The two intermediate gears between the pinion and the internal gear, are carried on the circular frame or cage, and roll around within the internal gear, thus forming a sun and planet motion giving the desired leverage. The great advantages of the double arrangement of intermediate gears are: balanced journal pressures, increased wearing surface, subdivision of strains, and an accurate equalization of the load, resulting in diminished friction and wear.

These blocks are very compact and occupy little head-room. For use on hand cranes this is the most rapid, efficient and least expensive hoisting mechanism yet devised; the speed in hoisting is from four to six times that of the ordinary worm wheel construction.

For list of Triplex Chain Blocks see opposite page.

#### Chain Blocks.

The Chain Blocks, as listed below, are the standard sizes usually supplied. They can be furnished to order with an extra length of hoist, when desired.

#### Differential Type.

Code Word.	No.	Capacity.	Length of Holst.	Minimum Distance between Hooks. Inches	Maximum Distance between Hooks. Feet & Inches.	Weight	Price Each.
Fidebamus.	8148 8149	1/8 1/4 1/2	5 6 7	16 17 21	6' 4" 7' 5" 8' 9"	11 22	\$ 18 00 18 00
Fiduciamus. Figendus. Figentibus.	8150 8151 8152	1 1 1/2	8 8½	26 32	10' 2" 11' 2"	30 51 81	21 00 28 00 36 00
Figminibus. Figulamus.	8153 8154	3	9 9 1/2	39 44	12' 3'' 13' 2"	122 180	45 00 60 00

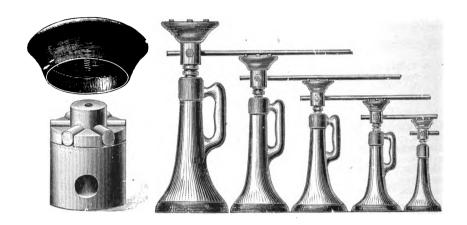
#### Duplex Type.

Figulinus.	8155	1/2	8	13	9' 1"	43	\$ 50 00
Figurandus.	8156	1	8	16	9' 4"	57	60 00
Figuratus.	8157	1½	8	19	9' 7"	76	80 00
Figuremus.	8158	2	9	21	9′ 9″	104	100 00
Filius.	8159	3	10	25	12' 1"	200	150 00
Finalibus.	8161	4	10	29	12' 5"	225	190 00
Findendus.	8162	5	12	31	14' 7"	340	280 00
Fingebamus.	8163	6	12	33	14' 9"	360	360 00
Finitibus.	8165	8	$\overline{12}$	36	15' 0"	390	420 00
Finxeramus.	8166	10	$\overline{12}$	45	15′ 9″	570	550 00

#### Triplex Type.

Finximus.	8167	1/2	8	15	9′ 3″	51	\$ 70 00
Firmabamus.	8168	1	8	17	9′ 5″	89	90 00
Firmaremus.	8169	1½	8	191/2	9′ 7½″	133	120 00
Firmaturus.	8170	2	9	24	11' 0"	203	140 00
Firmavimus.	8171	3	10	32	12' 8"	206	180 00
Fistucamus.	8172	4	10	37	13′ 1″	307	220 00
Fistulatus.	8173	5	12	45	15′ 9″	397	280 00
Fixurus.	8174	6	12	46	15′ 10″	417	330 00
Flabrarius.	8175	8	12	51	16′ 3″	505	400 00
Flagrandus.	8176	10	12	57	16′ 9″	622	480 00
Flagratus.	8177	12	12	57	16′ 9″	800	600 00
Flaminatus.	8178	16	12	61	17′ 1″	1000	720 00
Flaminicus.	8179	20	12	77	18' 5"	1150	850 00

# Jack Screws. With Roller Bushings.



THE advantage which these Jack Screws have over the ordinary forms now on the market, lies in the roller bearings with which they are provided. The construction of these bearings is clearly indicated in the above cut, which shows the manner in which the cap is supported on the rollers. These Jacks will be found superior to those having ball bearings, as the latter are not so satisfactory under heavy loads, while the roller bearings with which these are provided will stand any load that the Jack will carry, and are not liable to get out of order. It has been demonstrated that the roller bearings with which these Jacks are provided effect a saving of 75 per cent of the power needed to lift a given weight.

Code Word.	No.	Cap <b>a</b> city.	Minimum Overall Height.	Total Rise Screw.	Diameter of Screw.	Weight.	Price Each.
		Tons.	Inches.	Inches.	Inches.	Pounds.	
Flammamus.	8180	5	10	6	11/4	11	\$ 3 00
Flantibus.	8181	8	14	9	1½	24	4 00
Flatabamus.	8182	12	14	8	1 3/4	28	4 50
Flatamus.	8183	12	18	12	13/4	36	5 50
Flataremus.	8184	15	14	7	2	<b>32</b>	6 00
Flatavimus.	8185	15	20	13	2	44 ½	8 00
Flaveamus.	8186	20	16	10	2½	56 ½	9 50
Flavendus.	8187	20	24	18	2 ½	81 ½	13 00

#### Barrett Car and Truck Jacks.

THE several sizes of Jacks listed below are especially adapted for raising and lowering car bodies, trucks, etc., and are fast replacing the slow and cumbersome hydraulic jacks for this purpose,



No. 5398.

being more portable, more easily applied, less liable to derangement, and at the same time equally effective. The raising bar. which is of forged steel, is provided with a projecting foot at the lower end, enabling it to grapple low set loads, such as in raising track, etc., with great facility. Nos. 8189, 8192, 8193, 8194, 8198 and 8199 Jacks are provided with a tripping device. by means of which the load can be dropped instantly from any elevation, at the will of the operator. These "trip" Jacks are recommended for track work only. With the exception of the Nos. 8191, 8193, 5398 and 8199, which are single acting, the Jacks listed below are double acting. In the single acting Jacks, the lever operates only on the downward stroke, while in the double acting, it raises or lowers the load on both upward and downward strokes.

Code Word.	No.	Capacity.	Height with Bar Down.	Total Rise Bar.	Size of Bar.	Weight.	Price Each.
		Tons.	Inches.	Inches.	Inches.	Pounds.	
Flebimus.	8188	5	16	8	1¼ x 1¼	33	\$ 16 00
Fleverimus.	8189	10	173/	8 8	$1\frac{1}{2} \times 1\frac{1}{2}$	50	17 00
Flexamus.	8190	10	21	10	1% x 1½	65	25 00
Flexaturus.	8191	10	21	10	1% x 1½	68	25 00
Flexavimus.	8192	10	24	13½	1½ x 1½	62	18 00
Flexilibus.	8193	10	24	13¾	$1\frac{1}{2} \times 1\frac{1}{2}$	63	18 00
Fligimus.	8194	10	24 ¼	14	$1\frac{1}{2} \times 1\frac{1}{2}$	66	25 00
Flocibus.	8195	12	261/2	15	$1\frac{3}{4} \times 1\frac{7}{8}$	85	30 00
Floremus.	8196	15	22	10	$2\frac{1}{16} \times 1\frac{15}{16}$	100	35 00
Florigenus.	8197	15	28	15	$2\frac{15}{16} \times 1\frac{15}{16}$	115	40 00
Pugilabam.	5398	15	28	17½	$2\frac{16}{16} \times 1\frac{16}{16}$	102	35 00
Floriturus.	8198	15	31	19	$1\% \times 1\%$	105	32 00
Floruimus.	8199	15	31	19	1% x 1%	106	32 00



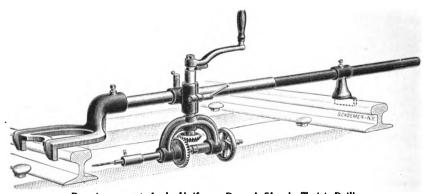
Barrett Car Box Jacks.

WHILE these Jacks are designed especially for handling the trucks of electric cars, they will be found extremely useful for a variety of other purposes demanding a low set jack. They are made throughout of the best malleable iron and steel, and are automatic in raising and lowering.

No.	53	97	'.
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Code Word.	No.	Capacity. Tons.	Height Bar Down. Inches.	Total Rise Bar. Inches.	Size of Bar.	Weight.	Price Each.
Falcatus.	8078	10	10	5	1%x1½	46	\$ 22 00
Puerulam.	5397	10	11	5	1%x1½	48	22 00

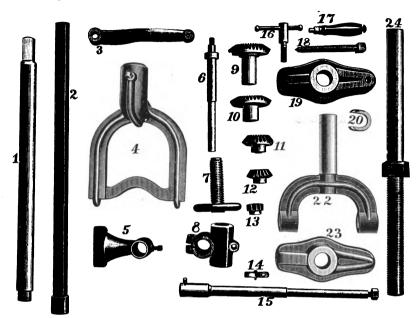
#### Horizontal Track Drill.



Requires a 1/2 Inch Uniform Round Shank Twist Drill.

Two sets of gears are furnished with this Drill, so that it may be either speeded or geared down, as desired. The Drill will fit different gauges of track, as the distance between the rail clamps can be varied from 3 feet 3 inches to 5 feet 3 inches. The weight of Drill is 68 pounds. A list of repair parts is shown on the opposite page.

#### Repair Parts For Horizontal Track Drill.



CODE WORD.	NO.				
Pigebam.	5083—Part 1, Standard		Each,	\$ 2	00
Pigituram.	5084— " · 2, " Extension		"	1	30
Pilandam.	5085— " 3, Crank		"	2	00
Pilariam.	5086— " 4, Track Shoe	<b></b>	"	4	1 00
Pilatam.	5087— " 5, Sliding Rest				80
Pineam.	5088— " 6, Cross Shaft			4	00
Pinguescam.	5089- " 7, Feed Wheel			2	50
Piniferam.	5090— " 8, Double Joint			ŧ	00
Pinnatam.	5091— " 9, Large Gear			2	00
Pinnigeram.	5092— " 10, Gear		"	1	<b>4</b> 0
Pinsebam.	5093— " 11, "	<b></b>	"	1	<b>2</b> 0
Pinsitatam.	5094— " 12 "		"	1	20
Pinsituram.	5095— " 13, Ratchet Gear		"	1	00
Pipiabam.	5096— " 14, " Dog	<b></b> .	4.6		50
Pipiaturam.	5097— " 15, Drill Spindle		"	4	1 50
Pipiaveram.	5098— " 16, Double Joint Screw			2	2 50
Pipilandam.	5099— " 17, Crank Handle and Bolt				50
Pipilatam.	5100— " 18, Clamp Screw				70
Piscariam.	5101— " 19, Upper Clamp			1	20
Piscinulam.	5102— " 20, Yoke		"		80
Pisinnam.	5104— " 22, Fork Arm		"	6	5 50
Pistandam.	5105— " 23, Lower Clamp		"	1	20
Pistatam.	5106— " 24, Standard and Nut			ŧ	5 00

# Buda Track Drill. For Tee Rails.



Requires a 5/8 Inch Uniform Round Shank Twist Drill.

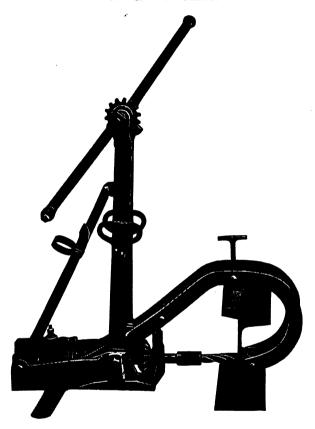
In the construction of the Buda Track Drill special attention has been given to secure both strength and durability, and the chance of breakage of wearing parts is reduced to a minimum. The drill frame is so arranged that it can be swung back to allow cars to pass without changing the position of the drill. Weight 90 pounds. A % inch twist drill is furnished with each machine.

CODE WORD. NO.

See pages 535 and 536 for Reamers and Twist Drills respectively.

Repair parts for this Drill listed on page 532.

## Buda Track Drill. For Girder Rails.



Requires a 5/8 Inch Uniform Round Shank Twist Drill.

BY removing the hooks from the rail and collapsing the drill frame, the car is allowed to pass without removing the drill from its position. Weight 100 pounds. A % inch twist drill is furnished with each machine.

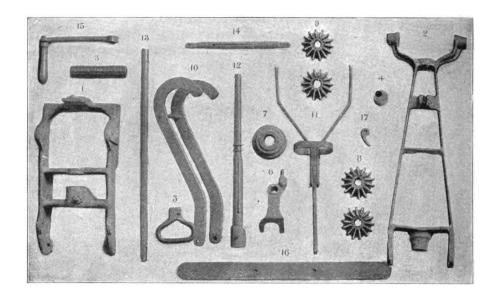
CODE WORD. NO.

See pages 535 and 536 for Reamers and Twist Drills respectively.

Repair parts for this Drill furnished to order.

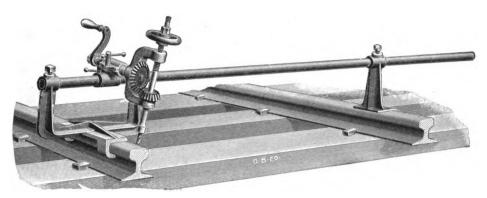
#### Repair Parts For Buda Track Drill.

#### For Tee Rails.



CODE WORD.	NO.				
Petroniam.	5066-Part	1, Base	Each,	\$ 4	00
Petrosam.	5067—"	2, Upright Frame	. "	5	00
Petuleam.	5068—"	3, Feed Screw		6	00
Pexuram.	5069—"	4, Eccentric		1	00
Phalericam.	5070—"	5, Two Side Handles	"		<b>40</b>
Phantasiam.	5071- "	6, Ratchet Finger	. "	1	00
Phariam.	5072—"	7, " Wheel		2	<b>50</b>
Phengitam.	5073—"	8, Two Upper Gears	"	2	00
Phialam.	5074—"	9, "Lower"	"	2	00
Philautiam.	5075—"	10, Rail Hooks	. "	2	00
Philitiam.	5076—"	11, Back Brace	. "	2	<b>50</b>
Philuram.	5077—"	12, Spindle	. "	5	00
Physicam.	5078 "	13, Vertical Shaft	"	2	00
Piabam.	5079—"	14, Crank Shaft	. "	1	<b>50</b>
Piandam.	5080—"	15, Two Cranks	. "	2	00
Piaturam.	5081—"	16, Foot Plate	. "	1	00
Piaveram.	5082—"	17, Ratchet Feed Dog	"		50

#### Vertical Track Drill.



Requires a 1/2 Inch Uniform Round Shank Twist Drill.

THIS Drill is particularly adapted for drilling holes in the base of rails for Type D "All Wire" Rail Bonds. It has a wide range of horizontal adjustment, and may be used for drilling holes in the contact rail, as well as the running rails, of third rail systems. The angle of the Drill can be adjusted to suit any requirements. The Drill is provided with two sets of gears for variable speeds. Approximate weight 60 pounds.

CODE WORD. NO.

Fluamus. 8200—For Drilling up to 1 inch hole ......Each, \$ 58 00

See pages 535 and 536 for Countersinks and Twist Drills respectively.

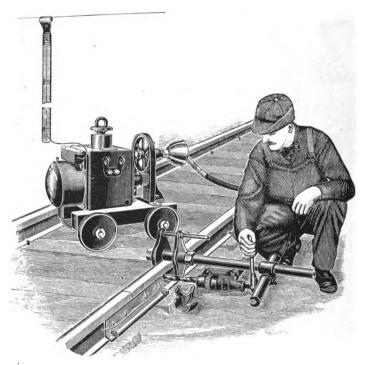


Requires a Taper Square Shank Twist Drill, with Shank 5/8 x 3/8 x 11/2 Inches Long.

CODE WORD.	NO.	
Astridam.	1727—12 inch Handle	\$ 4 50
A stride bam.	1728—14 " " "	5 00

See page 537 for list of Twist Drills.

#### Electric Drilling Plant.



Where current can be taken from the trolley wire, this equipment will be found very desirable for rail drilling, as it will do the work in a fraction of the time required for hand power drills. The Plant is compact, and can be readily transported on its own wheels or on a hand car, as desired; or carried by two men by means of handle bars placed through the brackets on each side of the motor. The motor is of an improved iron clad type, wound for 500 volts, and having a speed which can be varied from 750 to 1700 revolutions per minute. The complete Plant consists of one Electric Motor, one Flexible Shaft, one Universal Joint, one Track Drill Press and one Track Old Man. This Plant is furnished in two sizes, one for drilling holes up to 1 inch, and the other for holes up to 2 inches in diameter; the former having a 1 h. p. motor, and the latter a 1½ h. p. motor, with a heavier equipment throughout. The larger size of Plant is recommended where the size of hole is 1 inch or over. Standard Morse Taper Shank Twist Drills should be used with this machine.

CODE WORD, NO.

 Fluctamus.
 8201—For Drilling up to 1 inch hole.
 Each, \$ 306 00

 Fluctuatus.
 8202—""" 2""" 389 50

#### Uniform Round Shank Countersinks.



THESE Countersinks are intended for use in countersinking holes in the base of rails for applying "All Wire" Rail Bonds of the Type D form. They are furnished with two sizes of shank, as listed below, the ½ inch size being adapted for use with the Vertical Track Drill illustrated on page 533.

CODE WORD.	NO.											
Flue bamus.	8203—Co	untersinl	for	5∕8	in.	hole,	1/2	in.	shan	k	.Each,	\$ 0 45
Fluentamus.	8204	"	"	5∕8.	"	"	4 <u>1</u> 6 4	"	"		. "	45
Fluentibus.	8205—	44	"	3⁄4	"	"	1/2	"	"		. "	50
Flueremus.	8206	"	"	3/4	"	"	<del>1</del> 1	"	44		. "	50
Fluidemus.	8207	"	"	7/8	"	"	1/2	"	"		. "	60
Fluiscamus.	8208	"	"	7/8	"	"	41	"	4.6		. "	60

#### Tapered Reamers.



THESE Reamers are made with six flutes, and are especially adapted for reaming high carbon steel rails. They are provided with a straight shank ‡‡ of an inch in diameter and 2¼ inches long, and are suitable for use with the Buda Track Drills described on pages 530 and 531. The length of the Reamers is 6 inches.

CODE WORD.	NO.											
Fimbriatus.	8160-5/8	inch,	for	Reaming	9 1 6	inch	holes		Each,	\$ 4	80	
Finiamus.	8164-34	"	"	"	1 1 1 6	"	"	•••••	. "	5	10	
Fod a vimus.	<b>8225</b> —7/8	"	"	""	13	"	"		. "	5	85	

#### Uniform Round Shank Twist Drills.



Shank, 2¼ inches long, ½ of an inch in diameter. Length of Drill, 6 inches.

Code Word.	No.	Diameter, Inches.	Price Each.	Code Word.	No.	Diameter, Inches.	Price Each.
Astringam.	1729	1/4	\$ 0 60	Atrophiam.	1742	2 1 3 1	\$ 1 10
Astruendam.	1730	3 2	65	Attegrabam.	1743	11	1 15
Astruxeram.	1731	5 16	70	Ectropam.	2936	23	1 20
Astupebam.	1732	11 2	73	Attentabam.	1744	3/4	1 25
Astupendam.	1733	3/8	75	Edebam.	2937	2.5 3.5	1 30
Astutam.	1734	13	78	Edecimatam.	2938	13	1 35
Atellaniam.	1735	. 18	80	Edentabam.	2939	27	1 40
Athletam.	1736	15	83	Edicam.	2940	7/8	1 45
Atiam.	1737	1/2	85	Edicebam.	2941	39	1 50
Atiniam.	1738	17	88	Edictabam.	2942	15	1 60
At lanticam.	1739	9	90	Edideram.	2943	31	1 70
Atratam.	1740	19	95	Edolabam.	2944	1	1 80
Atriensam.	1741	5/8	1 05				

Shank, 2¼ inches long, 5% of an inch in diameter. Length of Drill, 6 inches.

Code Word.	No.	Diameter, Inches.	Price Each.	Code Word.	No.	Diameter, Inches.	Price Each.
Edolaturam.	2945	1/4	\$ 0 70	Effervebam.	2958	2 1 3 2	<b>\$</b> 1 10
Edolaveram.	2946	32	73	Effictam.	2959	116	1 15
Edomandam.	2947	5	75	Effideram.	2960	23 32	1 20
Edomitam.	2948	11	80	Effigiabam.	2961	3/4	1 25
Edomueram.	2949	3/8	85	Effindam.	2962	25 32	1 30
Educandam.	2950	13	88	Effindebam.	2963	13 16	1 35
Educatam.	2951	7 16	90	Effirmatam.	2964	2 7 3 2	1 40
Educturam.	2952	15 32	93	Efflandam.	2965	7/8	1 45
Edurabam.	2953	1/2	95	Efflatam.	2966	29	1 55
Effaturam.	2954	17	98	Effleturam.	2967	15	1 60
Effercitam.	2955	. 9	1 00	Effleveram.	2968	31	1 70
Efferendam.	2956	19	1 03	Efflorebam.	2969	1	1 80
Effervam.	2957	5/8	1 05			1	

#### Taper Square Shank Twist Drills.



Shank, 1½ inches long, tapering 5/8 to 3/8 of an inch square.

Code Word.	No.	Diameter, Inches.	Price Each.	Code Word.	No.	Diameter, Inches.	Price Each.
Polybutam.	5159	1/4	\$ 1 00	Porrigebam.	5170	19	\$ 1 40
Polygoniam.	5160	3 £	1 05	Porrixabam.	5171	5/8	1 40
Polyposam.	5161	15	1 10	Portandam.	5172	21 81	1 45
Pomiferam.	5162	11	1 15	Portatam.	5173	† l	1 45
Pompabam.	5163	3/8	1 20	Portendam.	5174	23 31	1 50
Pompaveram.	5164	13	1 25	Portitabam.	5175	3/4	1 55
Ponderabam.	5165	7	1 25	Porxeram.	5176	25	1 65
Ponebam.	5166	15	1 30	Posituram.	5177	13	1 75
Pontinam.	5167	1/2	1 30	Possederam.	5178	27 31	1 90
Popinam.	5168	47	1 35	Possidebam.	5179	7/8	2 05
Populeam.	5169	9	1 35				

#### Standard Straight Shank Twist Drills.



The diameter of the shank is the same as that of the Drill.

Code Word.	No.	Diameter, Inches	Price Per Dozen.	Code Word	No.	Diameter, Inches.	Price Per Dozen
Postferam.	5180	5	\$ 1 10	Potentiam.	5190	1 <u>5</u>	\$ 2 90
Posthabeam.	5181	3 3 1	1 20	Potionabam.	5191	1/4	3 15
Postibam.	5182	7,	1 30	Potissimam.	5192	17	3 40
Postmittam.	5183	1/8	1 45	Potitabam.	5193	3 2	3 65
Postponam.	5184	9 84	1 60	Potiundam.	5194	19	3 90
Postulabam.	5185	3 2	1 80	Praebebam.	5195	5 1 A	4 20
Postumam.	5186	11	2 00	Praecalvam.	5196	2 1 8 4	4 50
Postumatam.	5187	3 16	2 20	Praecaveam.	5197	11	4 80
Postveniam.	5188	13	2 40	Praecidam.	5198	23	5 10
Petritam.	5189	7 3 7	2 65	Praecingam.	5199	3/8	5 40

#### **Bonding Tools.**

#### For "All Wire" Rail Bonds.

#### Type G.

ON the two following pages will be found illustrations of the several Tools required in installing "All Wire" Rail Bonds of the Type G (or Soldered) form.

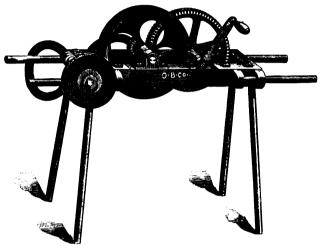
The Hand Power Grinding Machine shown on the opposite page, is intended for polishing the surfaces of rails before placing the bonds in position. This machine is simple and compact in construction and light in weight, so that it can be readily carried by two men from place to place, as required. It is provided with a flexible shaft, consisting of a close wound spiral of spring steel wire, at each end of which a coupling is provided, one fitting the countershaft of the machine, and the other the emery wheel arbor. An extra flexible shaft and a repair coupling are included with each machine. In case a grinder operated by electric power is preferred to a hand machine, the Grinder illustrated on page 541 is recommended.

For soldering the bonds in place, the Duplex Blow Torch illustrated on the opposite page, is recommended. This Torch consists of a substantial galvanized steel tank, provided with two large burners, by means of which the opposing ends of the rails to be bonded can be heated at the same time. In using the Blow Torch, it is advisable to concentrate the heat at the proper place as much as possible, and also to protect the burners from currents of air. For this purpose the Wind Shields illustrated on page 540, are recommended. By means of these Shields the efficiency of the Blow Torch is considerably increased, as they serve to keep the burners hot. The Style A Shield is attached to the rail flange by means of thumb-screws, while the Style B is secured to the rail by two hooks which project over the top and engage with the flange of the rail.

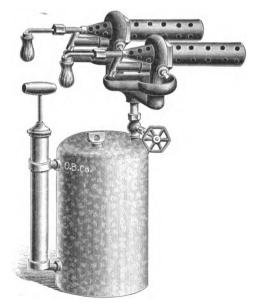
In applying the bonds to the rails, Clamping Tongs are required. These are furnished in two styles, as illustrated on page 540, one being suitable for the Form 1, and the other for the Form 2, Type G Rail Bonds.

CODE WORD.	NO.			
Flumineus.	8209—Hand Power Grinding Machine	.Each,	\$ 45	00
Fluoribus.	8210—Emery Wheel, 8 in. in diameter, % in. thick	. "	3	00
Flutabimus.	8211—Blow Torch	. "	35	00
Flut and us.	8212—Wind Shield, Style A	. "	2	20
Flutatus.	8213— " " B	. "	2	20
Flutemus.	8214—Clamping Tongs, for Type G—Form 1 Bonds	. "	2	50
Fluvidus.	8215— " " " G— " 2 "	. "	3	00

# Bonding Tools. For "All Wire" Rail Bonds. Type G.



No. 8209. Hand Power Grinding Machine.



No. 8211. Duplex Blow Torch.

#### **Bonding Tools.**

For "All Wire" Rail Bonds.

Type G.



No. 8212. Wind Shield, Style A.



No. 8213. Wind Shield, Style B.

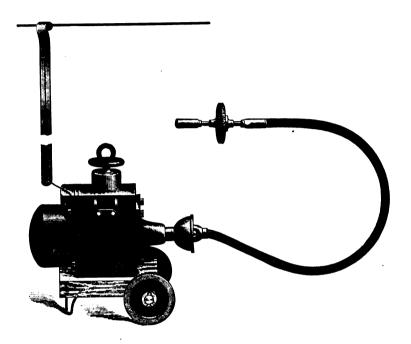


No. 8214. Clamping Tongs for Type G-Form 1 Bonds.



No. 8215. Clamping Tongs for Type G-Form 2 Bonds.

#### Electric Grinding Machine.



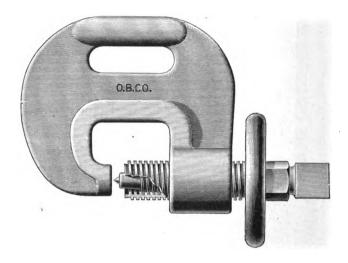
THIS outfit is especially adapted for grinding the surfaces of rails for applying "All Wire" Rail Bonds of the Type G form. It consists of a 500 volt multi-speed electric motor, fitted with a flexible shaft and emery wheel arbor. The machine can be readily transported from place to place as the work requires, either on its own wheels or by means of handle bars placed through the brackets on each side of the machine, by which it may be carried. It is arranged with a contact piece for tapping on to the trolley wire by means of a hook at the end, as shown in the illustration above. The speed of the motor can be varied to suit all ordinary requirements.

CODE WORD. NO.

Fluxeramus. 8216—Grinding Machine, Regular, ¾ h. p. Motor. Each, \$ 156 00 Forcipibus. 8235— " Extra Heavy, 2 " " 237 00 Fluoribus. 8210—Emery Wheel, 8 in. in diameter, ¾ in. thick.... " 3 00

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#### Rail Bond Compressor.



THE Compressor illustrated above is very substantially constructed of the best materials and has been found to be the most all-around satisfactory device of its kind on the market. It is of the compound screw type, the outer screw, which is operated by the hand wheel, serving to press the terminal of the bond tightly against the web of the rail, after which the inner screw is tightened up by means of a long wrench, compressing the terminal firmly into the rail and forming a head on the projecting end of the terminal. The Small Compressor listed below is suitable for all ordinary tee rails, and can be easily handled by one man.

The prices given below do not include Wrenches.

Code Word.	No.	Size.	For Type of Rail.	Prio Eac	
Relecturam. Relevabam. Releveram.	5437 5438 5439	Small Medium Large	Tee Rails, 80 lb. and less Tee and Girder Rails, 7 in. in height and less Girder Rails, over 7 in. in height	-	00 00 70

#### Rail Bond Testing Set.



THIS instrument is designed for use in testing the resistance of bonded rail joints. It utilizes the current in the track, and no matter how variable this current may be, since the variation through the joint and the adjacent rail is precisely the same, it introduces no error. The instrument operates on the principle of a Wheatstone bridge, comparing the resistance of the joint with a standard length, usually three feet, of rail. Only one man is required to operate the instrument and take the readings, and 100 joints can be tested with this instrument in an hour. The rail contacts, which consist of hardened steel chisels attached to the contact arms, are designed to secure a perfect contact under all rail conditions. The readings are taken by means of a telephone receiver, to which a variable resistance and a circuit interrupter are connected. By varying this resistance until no sound is perceptible in the telephone, the ratio of the known to the unknown resistance is determined. There are no delicate moving parts to get out of order, and the outfit is extremely durable, even when subjected to the rough usage it naturally gets on this class of work.

CODE WORD. NO.

Fluximus. 8217—Testing Set complete ...... Each, \$ 250 00

#### Self=Feeding Mine Drill.

THE Self-Feeding Mine Drill shown in the accompanying illustration is designed especially for use in mines, where its application is

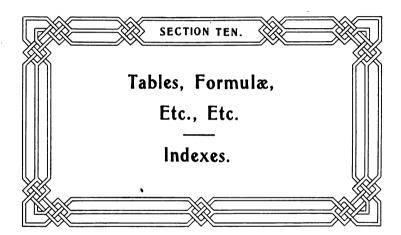


indicated in drilling holes in the roof or walls of the mine for installing mine hangers, as well as for blasting purposes. The Drill is so arranged that it can be anchored at the lower end, either against the ground or a projecting ledge in the wall, or both, as desired, by properly adjusting the movable brace casting on the pipe standard. The auger is operated by means of a crank which feeds the Drill automatically while the latter is being rotated. The Drill can be quickly removed when desired, by loosening the clamping piece bearing against the feed screw, which will release the latter, causing it to drop back into the pipe standard. Perfect lubrication of the feed screw can be insured by keeping the pipe standard filled with oil.

Of the several sizes of Auger Bits listed below, the No. 8219 is recommended for drilling holes for Jamme Mine Hangers, and the No. 8220 for Expansion and Suspension Bolts listed on pages 141, 147 and 148, respectively; while

the Nos. 8221 to 8224 Bits are suitable for blasting and general purposes.

CODE WORD.	NO.													
Fluxurus.	8218—M	ine l	Orill .					<b>.</b>				Each,	\$ 22	00
Foculandus.	8219—A	uger	Bit,	11/8	in.	in	diameter,	12	in.	long	. <b></b>	"	2	20
Foculatus.	8220—	"	"	1¼	"	"	"	12	"	"		"	2	20
Focule mus.	8221—	"	"	11/8	"	"	"	24	"	"	<b>.</b>	"	4	40
Fodamus.	8222—	"	"	11/4	"	"	"	24	"	"		"	6	60
Fodare mus.	8223—	"	"	11/8	"	"	66	36	"	"		"	4	<b>40</b>
Fodaturus.	8224—	"	"	1¼	"	"	"	36	"	"	<i></i> .	44	6	60



#### Metric System of Weights and Measures.

#### Measures of Lengths.

```
1 Millimeter
                   0.001 Meter =
                                    0.0394
                                              Inch.
1 Centimeter =
                   0.01 Meter =
                                    0.3937
                                              Inch.
1 Decimeter
                   0.1
                        Meter =
                                    3.937
                                              Inches.
1 Meter
                        Meter =
                                   39.37
                                              Inches.
                   1.
1 Dekameter =
                  10.
                        Meters = 393.7
                                             Inches.
1 Hectometer = 100.
                        Meters = 328 Feet, 1 Inch.
                        Meters =3280 Feet, 10 Inches.
1 Kilometer = 1000.
1 Myriameter =10000.
                        Meters =
                                    6.2137
                                              Miles.
```

It will be noticed that 10 Millimeters equal 1 Centimeter, 10 Centimeters equal 1 Decimeter, and so on.

#### Measures of Volumes.

1 Milliliter		0.001	Liter	=	0.061	Cubic Inch.
1 Centiliter	=	0.01	Liter	==	0.6102	Cubic Inch.
1 Deciliter	_	0.1	Liter	=	6.1022	Cubic Inches.
1 Liter	_	1.	Liter	=	0.9081	Quart.
1 Dekaliter	= :	10.	Liters	=	9.081	Quarts.
1 Hectoliter	= 10	00.	Liters	=	2 Bush	els, 3.35 Pecks.
1 Kiloliter	=100	00.	Liters	=	1.308	Cubic Yards.

#### Weights.

1 Milligramme	= 0.0	001 Gramme	==	0.0154	Grain.
1 Centigramme	= 0.0	01 Gramme	=	0.1543	Grain.
1 Decigramme	= 0.1	l Gramme	_	1.5432	Grains.
1 Gramme	= 1.	Gramme	=	15.432	Grains.
1 Dekagramme	= 10.	Grammes	=	0.3527	Ounce.
1 Hectogramme	<b>= 100.</b>	Grammes	=	3.5274	Ounces.
1 Kilogramme	= 1000.	Grammes	=	2.2046	Pounds.
1 Myriagramme	=10000.	Grammes	=	22.046	Pounds.

#### Metric and English Equivalents.

Inches = Millimeters $\div 25.4$	Lbs. Avoirdupois	=Kilogrammes x 2.20462
Feet =Meters x 3.28083	Tons (2000 lbs.)	$=$ Kilogrammes $\div$ 907.18
Yards = Meters x 1.09361	Lbs. per Foot	-Kilo. per Meter x .67196
$Miles = Kilometers \div 1.60935$	Lbs. per Cu. Ft.	=Kilo. per Cu. Meter x .06243
Sq. In.—Square Millimeters x .00155	Sq. Millimeters	-Square Inches x 645.137
Sq. Ft. $=$ Square Meters x 10.7641	Sq. Meter	=Square Feet x .0929
Acres = Square Kilometers x 247.114	Grammes	-Ounces x 28.3495
Cu. In.—Cubic Centimeters ÷ 16.3870	Grammes	=Pounds x 453.5926
Cu. Ft. =Cubic Meters x 35.3140	Kilogrammes	-Pounds x .45359

# Special Shapes of Hard Drawn Trolley Wires.



English System.

Figure 8.

Table No. 1.

Grooved.

Section of **Phickness** of Web. Inches Lower Lobe. Inches. Thickness. Upper Lobe. Inches. Depth of Section. Inches. Pounds per 1000 Feet. Circular Mils. Area. Approximate Number B. & S. Gauge.

22222

176 202 316 252 252 252 252

420 530 530 600 600

320 395 1003 403 648 641 640

105,625 133,225 168,100 335,000 231,600 133,225 168,100 211,600

8888

-88

Figure 8. Figure 8. Figure 8. Figure 8. Figure 8. Grooved. Grooved3rooved. 315 350 398 560 452

Metric System.

Millimeter. Millimeter. 8.890 10.109 14.224 11.480 Millimeter. 4.470 5.130 5.638 8.026 6.400 10.668 11.98 13.462 19.050 Millimeter. Kilogrammes per Kilometer. 476.2 587.7 748.5 1492.5 964.2 600.2 756.8 Square Millimeters. 53.47 67.51 85.18 169.74 107.22 67.51 85.18 Approximate Gauge. -88 8888

Figure 8. Figure 8. Figure 8. Figure 8. Figure 8. Grooved.

2.768 3.048 3.352 4.826 3.810

Section.

Grooved. Grooved.

The breaking strain is the same as for corresponding sizes of hard drawn wire as given in Table No. 2 on the opposite page.

# Properties of Solid Copper Wire. English and Metric Systems.

	Num- ber.		0000	000	00	0 -	6	1 00	4	20	9	7	000	6	10	11	12	13	14	15	91	17	10	20	21	22	23	24
Breaking Strain.	Soft Drawn.	Kilo- gram's.	2562	2031	1611	1277	GUO	637	202	400	317	251	199	158	126	66	62	63	49	33	31							
	Soft	Pounds.	5650	4480	3553	2818	1770	1405	1114	883	200	555	440	349	277	219	174	138	109	87	69							
	Hard Drawn.	Kilo- gram's.	3768	2990	2370	1698	1418	1224	892	707	561	444	352	280	222	176	139	111	88	69	09		14					
	Hard I	Pounds.	8310	6580	5226	4558	9197	2480	1967	1559	1237	086	778	617	489	388	307	244	193	153	133							
Weight.	Kilo- grammes per Kilo- meter.		954.30	757.39	600.20	476.17	200 57	237.40	188.30	148.80	118.40	93.90	74.50	58.03	47.61	37.10	29.76	23.40	18.45	14.70	11.70	9.07	F 80	4.61	3.71	2.89	2.23	1.79
	Pounds per Mile.		3382	2687	2129	1835	1064	838	665	529	419	331	262	208	166	132	105	83	65	52	42	32	20.0	16.4	13.0	10.2	200	6.5
	Pounds per 1000 Feet.		641	509	403	320	606	159	126	100	42	63	20	39	32	52	20	15.7	12.4	0.00	6.7	6.1	0.6	5.00	2.5	1.9	1.5	1.2
		Square Millim't'rs.	107.20	85.01	67.43	53.47	22 63	26.67	21.16	16.77	13.30	10.55	8.362	6.633	5.260	4.173	3.307	2.625	2.082	1.649	1.309	1.039	6590	.5176	.4104	.3255	12581	2047
Area.	Square Inches.		.166190	.132025	.104520	082932	059190	041338	.032784	.025998	.020617	.016349	012966	.010284	.008153	.006467	.005128	.004067	.003225	.002557	.002028	.001608	0012100	0000802	.000636	.000504	.000400	.000317
	Circular Mils.		211,600	168,100	133,225	105,625	66 564	52,441	41,616	33,124	26,244	20,736	16,384	12,996	10,404	8,281	6,561	5,184	4,096	3,249	7,601	2,025	1,906	1.024	812.3	640.1	510.8	404.0
Diameter.		Millim't'rs.	11.683	10.404	9.266	8.251	6 544	5.827	5,190	4.621	4.115	3.665	3.263	5.906	2.588	2,305	2.052	1.828	1.628	1.449	1.231	1.150	0116	8118	.7229	.6438	.5/33	5105
Dian		Mils.	460	410	365	325	959	229	204	182	162	144	128	114	102	91	81	72	64	22	19	45	96	35	28.5	25.3	22.6	20.1
	Num-	per.	0000	000	00	0 -	6	100	4	20	9	7	000	6	10	11	12	13	14	15	91	17	10	20	21	22	23	24

#### Data for Conversion of English and Metric Systems.

In transposing from the English to the Metric System and vice versa in Table No. 2 on the preceding page the following formulæ will be found convenient:

```
1 \text{ Mil} = 1-1000 \text{ part of an Inch} = .001 \text{ Inch.}
Circular Mils
                               = Diameter in Mils. squared.
1 Inch
                               = 25.4
                                            Millimeters.
1 Kilogramme
                               = 2.2046
                                            Pounds.
                                  1.2732
                                            Circular Mils.
1 Square Mil
1 Circular Mil
                                    .7854
                                            Square Mil.
1 Millimeter
                               = 39.37
                                            Mils.
1 Kilogramme per Kilometer
                                   .67196 Pound per 1000 Feet.
                               = 1.4882 Kilogrammes per Kilometer.
1 Pound per 1000 Feet
                               = Diameter in Mils \div 39.37
Diameter in Millimeters
Diameter in Mils
                               = Diameter in Millimeters x 39.37
                               = (Diameter in Millimeters) ^2 \div 1.273
Area in Square Millimeters
                               =\sqrt{\text{Area in Square Millimeter x 1.273}}
Diameter in Millimeters
Area in Square Millimeters
                               = Area in Circular Mils ÷ 1973.5
                               = Area in Square Millimeters x 1973.5
Area in Circular Mils
                               = Weight in Kilogrammes per Kilometer + 1.4882
Pounds per 1000 Feet
                               = Weight in Pounds per 1000 Feet ÷ .67196
Kilogrammes per Kilometer
                               = Area in Circular Mils x .003027
Pounds per 1000 Feet
                               = 330360 ÷ Circular Mils.
Feet per Pound
```

#### To Determine the Copper Equivalent of Steel Rails.

Substitute in the following formula:

```
C. M. = 16000 \times W (Weight of rail per yard). Example:—What is the copper equivalent of a rail weighing 65 lbs. per yard? C. M. = 16000 \times 65 = 1,040,000 \text{ C. M.}
```

That is, the rail has a conductivity equal to a copper wire of 1,040,000 C. M. area, and two rails would be equivalent to 2,080,000 C. M. of copper.

#### Tensile Strength of Copper Wire.

As the tensile strength of copper wire varies from 32000 to 36000 pounds per square inch for soft drawn wire and from 45000 to 68000 pounds per square inch for hard drawn wire, the breaking strain in Table No. 2 is calculated for 34000 pounds for soft drawn wire and 60000 pounds for hard drawn with the exception of the 0000, 000 and 00 whose breaking strain is taken at 50000 pounds, the 0 at 55000 pounds and the number 1 at 57000 pounds per sq. inch. (Roebling).

# Tables. Properties of Bare Stranded Copper Cable.

Brown and Sharpe Gauge. English and Metric Systems.

Table No. 3.

No.	Ar	ea.		Diame	ter.	Weight.					
B. & S. Gauge.	Circular Mils.	Square Millimeters.	Decim'l of an Inch.	Nearest 32d.	Millimeters.	Pounds per 1000 Feet.	Pounds per Mile.	Kilogrammes per Kilometer.			
	1,000,000	506.7	1.152	15	29.260	3050	16104	4538.6			
	950,000	481.3	1.125	11/8	28.574	2898	15299	4312.5			
1	900,000	456.0	1.092	133	27.736	2745	14494	4084.8			
	850,000	430.7	1.062	116	26.975	2593	13688	3858.6			
	800,000	405.3	1.035	132	26.289	2440	12883	3631.1			
	750,000	379.9	.999	1	25.400	2288	12078	3404.7			
	700,000	354.6	.963	31	24.460	2135	11273	3177.0			
	650,000	329.2	.927	15	23.545	1983	10468	2950.9			
	600,000	304.0	.891	39	22.631	1830	9662	2723.2			
	550,000	278.6	.855	100 100 100 100 100 100 100 100 100 100	21.717	1678	8857_	2497.0			
	500,000	253.3	.819	13	20.802	1525	8052	2269.3			
	450,000	228.0	.770	35	19.558	1373	7247	2043.1			
	400,000	202.6	.728	25 3 2 34	18.491	1220	6442	1815.4			
	350,000	177.3	.679	1 1 5 8	17.246	1068	5636	1589.2			
	300,000	152.0	.630	5/8	16.002	915	4831	1361.6			
ĺ	250,000	126.6	.590	19 32	14.986	762	4026	1133.9			
0000	211,600	107.2	.530	17	13.462	645	3405	959.8			
000	168,100	85.01	.470	15	11.938	513	2709	763.4			
00	133,225	67.43	.420	174	10.668	406	2144	604.1			
0	105,625	53.47	.375	3/8	9.525	322	1700	479.1			

#### Properties of Stranded Weatherproof Feeder Cable.

Brown and Sharpe Gauge.
English and Metric Systems.

Table No. 4.

Circular	Square	Outs	ide Diameter.	Weight.						
Mils.	Millimeters.	Inches.	Millimeters.	Pounds per 1000 Feet.	Pounds per Mile.	Kilogrammes per Kilometer				
1,000,000	506.7	1½	38.099	3550	18744	5282.7				
900,000	456.3	113	35.712	3215	16975	4784.2				
800,000	405.3	$1\frac{1}{3}\frac{1}{2}$	34.112	2880	15206	4285.7				
750,000	379.9	1 1 5	33.337	2713	14325	4037.2				
700,000	354.6	$1^{\frac{1}{9}}_{\frac{9}{32}}$	32.537	2545	13438	3787.2				
650,000	329.2	11/4	31.749	2378	12556	3538.6				
600,000	304.0	$1_{\frac{7}{3}2}$	30.937	2210	11668	3288.6				
550,000	278.6	$1\frac{3}{16}$	30.162	2043	10787	3040.1				
500,000	253.3	11/8	28.574	1875	9900	2790.1				
450,000	228.0	$1_{\frac{3}{32}}$	27.762	1703	8992	2534.2				
400,000	202.6	$1_{\overline{1}\overline{6}}$	26.987	1530	8078	2276.7				
350,000	177.3	1	25.400	1358	7170	2020.8				
300,000	152.0	15	23.812	1185	6257	1763.4				
250,000	126.6	292	23.012	1012	5343	1505.9				
211,600	107.2	27	21.412	775	4092	1153.4				

CTRANDED Copper Cables are made in two forms, concentric laid and cable or rope laid, the former being the more common. A concentric laid cable is more compact than a rope laid cable, and hence its outside diameter is somewhat less. The weight of a stranded conductor runs about 1 per cent heavier than that of a solid wire of equal circular milage. In the tables giving the properties of stranded cables the dimensions are given for concentric laid cables. When great flexibility is required a rope laid cable should be used. Cables used as feeders in electric railway construction are generally solid drawn up to 0000, but for larger sizes than 0000 a stranded cable is used, the 0000 being used both in solid and stranded forms.

The resistance of a stranded or solid copper wire per 1000 ft. at 68° F. may be found as follows:

$$R = \frac{10354}{\text{Circular Mils}}$$

#### To Calculate the Proper Size of Feeder.

Knowing the distance from the source of power to the point of distribution and the current to be carried, the size of conductor required for any allowable drop of pressure may be found by substituting in the following formulæ:

Area in C. M. 
$$=\frac{11 \times C \times L}{V}$$

 Current in amperes.
 Double the distance in feet from the source of power to the point of distribution, or the total length of the circuit. The allowable drop in volts.

For grounded circuits such as are met with in railway practice L represents the distance in feet from the source of power to the point of distribution only, the return circuit involving a different constant.

Example:—Required, the size of railway feeder to carry 450 amperes and deliver same at a point 3000 feet from the power house with a drop of 10 per cent, voltage at power house 500.

10 per cent of 500 volts is 50, the allowable drop.

C. M. 
$$=\frac{11 \times 450 \times 3000}{50} = 297000$$
 C. M. required.

which would mean a 300000 C. M. cable.

It will be seen that if V, the allowable drop in voltage is doubled, the area of the wire will be only one-half as great while doubling L, the length of the circuit, or C, the current carried, doubles the area of the wire.



#### Tables.

#### Comparison of Aluminum and Copper Conductors.

THE specific gravity of Aluminum is 2.68 and of Copper 8.93; or in other words, Copper is 3.33 times heavier than Aluminum, volume for volume. The conductivity of Copper varies from 96 to 99 while for Aluminum it varies from 59 to 63. Taking the conductivity of Copper as 97 and of Aluminum as 61, the size of a cable made of Aluminum in order to have the same carrying capacity as that of a Copper cable, would be 1.59 times the circular milage of the Copper cable. Thus, a Copper cable of 300000 C. M. area, if replaced by a cable of Aluminum, the Aluminum cable would have an area of 1.59 times 300000 C. M., or 477000 C. M. The comparative weights, therefore, of equal lengths and equal conductivities of Copper and Aluminum cables are as 1 to .48; that is, a cable of Aluminum would weigh 48 % of that of a Copper cable of the same length and conductivity.

# Comparative Weights of Copper and Aluminum Cables.

Table No. 5.

No.		Decimal	Nearest		Weig	thts.	
B. & S.	Circular Mils.	of an Inch.	32d of	Pounds pe	er 1000 Feet.	Pounds per Mile.	
Gauge.		Inch.	an Inch.	Copper.	Aluminum.	Copper.	Aluminum
	1,000,000 950,000 900,000 850,000 800,000	1.152 1.125 1.092 1.062 1.035	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	3050 2898 2745 2593 2440	920 874 828 782 736	16104 15299 14494 13688 12883	4860 4617 4374 4131 3888
	750,000 700,000 650,000 600,000 550,000	.999 .963 .927 .891 .855	1 3312 155 169 289 7/8	2288 2135 1983 1830 1678	690 644 598 552 506	12078 11273 10468 9662 8857	3645 3402 3159 2916 2673
	500,000 450,000 400,000 350,000 300,000	.819 .770 .728 .679 .630	136 255 33/4 116 5/8	1525 1373 1220 1068 915	460 414 368 322 276	8052 7247 6442 5636 4831	2430 2187 1924 1701 1458
0000 000 00 0	250,000 211,600 168,100 133,225 105,625	.590 .530 .470 .420 .375	19 32 17 32 15 32 15 32 7	762 645 513 406 322	230 195 155 123 97	4026 3405 2709 2144 1700	1215 1028 816 647 513



Tables.

# Comparative Weights of Copper and Aluminum Wires.

Table No. 6.

American		Are	a.	Weights.			
Gauge, B. & S.	Diameter Mils.	Circular	Square	Pounds pe	r 1000 Feet.	Pounds	per Mile.
No.		Mils.	Inches.	Copper.	Aluminum.	Copper.	Aluminum.
0000	460	211,600	.166190	641	193	3382	1018
000	410	168,100	.131793	509	153	2687	808 ·
00	365	133,225	.104520	403	121	2129	640
0	325	105,625	.082932	320	96	1688	507
1	289	83,521	.065733	253	76	1335	403
. 2	258	66,564	.052130	202	60	1064	319
3	229	52,441	.041338	159	48	838	253
4	204	41,616	.032784	126	38	665	201
5	182	33,124	.025998	100	30	529	159
6	162	26,244	.020617	79	24	419	126
7	144	20,736	.016349	63	19	331	100
8	128	16,384	.012966	50	15	262	79
9	114	12,996	.010284	39	12	208	63
10	102	10,404	.008153	32	9	166	49
11	91	8,281	.006467	25	8	132	40
12	81	6,561	.005128	20	6	105	31
13	72	5,184	.004067	15.7	4.720	83	25
14	64	4,096	.003225	12.4	3.743	65	20
15	57	3,249	.002557	9.8	2.968	52	· 16
16	51	2,601	.002028	7.9	2.354	42	12
17	45	2,025	.001608	6.1	1.867	32	10
18	40	1,600	.001275	4.8	1.480	25.6	7.8
19	36	1,296	.001011	3.9	1.174	20.7	6.2
20	32	1,024	.000802	3.1	.9310	16.4	4.9
21	28.5	812.3	.000636	2.5	.7382	13.0	3.9
22	25.3	640.1	.000504	1.9	.5855	10.2	3.1
23	22.6	510.8	.000400	1.5	,4643	8.2	2.5
24	20.1	404.0	.000317	1.2	.3682	6.5	1.9
25	17.9	320.4	.000251	.97	.2920	5.1	1.5

Tables.

#### Properties of Galvanized Wire Strand.

#### English and Metric Systems.

Table No. 7.

Di	ameter.	W	eight.	Breaki	ng Strain.
Inches.	Millimeters.	Pounds per 1000 Feet.	Kilogrammes per Kilometer.	Pounds.	Kilogrammes
1/2	12.6998	510	758.9	8300	3765.8
	11.9061	480	714.2	7500	3402.9
.7 <sub>8</sub>	11.1124	370	550.5	6000	2722.3
3/8	9.5249	300	446.4	4750	2155.1
15 17 17 3/8 5 16	. 7.9374	210	312.5	3250	1474.5
. 39	7.1437	180	267.8	2600	1179.6
17	6.7470	150	223.2	2250	1020.8
1/4	6.3499	115	171.1	1750	794.0
7 3 2	5.5562	87.5	130.2	1250	567.1
17 6 4 7 7 3 8 1 6	4.7624	65.0	96.72	1000	453.7
5. 3.2	3.9688	45.0	66.96	750	340.2
84	3.5720	35.0	52.08	525	238.2
5 9 64 1/8 3	3.1749	22.5	33.48	375	170.1
3 2	2.3812	20.0	29.76	300	136.1

Galvanized Steel Strand used for span construction is composed of 7 wires twisted into a single strand. The breaking strain varies with the grade of steel used, which runs from 55000 pounds to 300000 pounds per square inch. The approximate breaking strain of ordinary strand is given in table. Sizes most generally used for supporting trolley wires are  $\frac{1}{16}$  and  $\frac{3}{16}$  inch.

#### Standard Iron Pipe.

Standard Iron Pipe is known to the trade by its *nominal* inside diameter, which, however, is not its *actual* inside diameter. A pipe known as 1½ inch pipe will measure 1.38 inches diameter inside, while an extra strong pipe will measure 1.272 inches, the outside diameter of both styles being the same, 1.66 inches.

Pole brackets used for the suspension of trolley wires are usually made from what is known as standard steam gas and water pipe, the sizes in most general use being  $1\frac{1}{4}$ ,  $1\frac{1}{2}$  and 2 inch pipe (see Table No. 8), the  $1\frac{1}{2}$  inch being used in the majority of cases.

Standard Trolley Poles are made from both the ordinary (Table No. 8), and the extra strong pipe (Table No. 9).

# Tables. Standard Pipe, Butt and Lap Welded. English and Metric Systems.

Table No. 8.

	nal Inside imeter.						ness of tal.	Weight.	
Inches.	Milli- meters.	Inches.	Milli- meters.	Inches.	Milli- meters.	Inches.	Milli- meters.	Lbs. per Foot.	Kilogram's per Meter.
1/8	3.174	.269	6.83	.405	10.28	.068	1.727	0.24	.355
1/4	6.349	.364	9.24	.540	13.71	.088	2.235	0.42	.621
1/4 3/8	9.524	.493	12.52	.675	17.15	.091	2.311	0.56	.828
1/2	12.700	.622	15.79	.840	21.33	.109	2.768	0.84	1.243
3/4	19.050	.824	20.93	1.050	26.67	.113	2.870	1.12	1.657
1	25,400	1.047	26.59	1.315	33.40	.134	3.403	1.67	2.471
11/4	31.749	1.380	35.05	1.660	42.16	.140	3.556	2.24	3.315
1%	38.099	1.610	40.89	1.900	48.26	.145	3.683	2.68	3.966
2	50.799	2.067	52.50	2.375	60.32	.154	3.911	3.61	5.342
2½	63.499	2.467	62.66	2.875	73.02	.204	5.181	5.74	8.495
3	76.199	3.066	77.87	3.500	88.89	.217	5.511	7.54	11.159
31/2	88.898	3.548	90.12	4.000	101.60	.226	5,740	9.00	13.320
4	101.600	4.026	102.26	4.500	114.30	.237	6.019	10.66	15.776
41/2	114.300	4.508	114.50	5.000	127,00	.246	6.248	12.49	18.485
5	127.000	5.045	128.14	5.563	141.30	.259	6.578	14.50	21.460
6	152,400	6.065	154.05	6.625	168.27	.280	7.111	18.76	27.764
7	177.80	7.023	178.38	7,625	193.67	.301	7.645	23.27	34.439
8	203.20	7.981	202,71	8.625	219.07	.322	8.178	28.18	41.706
9	228.60	8.937	226.99	9.625	244,47	.344	8.737	33.70	49.876
10	254.00	10.018	254.44	10.750	273.05	.366	9.296	40.00	59.200
11	279.39	11.25	285.74	12.000	304.79	.375	9.525	45.00	66.600
12	304.79	12.00	304.80	12.750	323.85	.375	9.525	49.00	72.520
13	330.19	13.25	336.54	14.000	355.59	.375	9.525	54.00	79.920
14	355.59	14.25	361.94	15.000	380.99	.375	9.525	58.00	85.840

#### Extra Strong Pipe.

Table No. 9.

1/8	3.174	.205	5.207	.405	10.28	.100	2.540 .29	.431
1/4	6.349	.294	7.467	.540	13.71	.123	3.124 .54	.803
3/8	9.524	.421	10.693	.675	17.15	.127	3.226 .74	1.101
1/2	12.700	.542	13.766	.840	21.33	.149	3.785 1.09	1.622
3/4	19.050	.736	18.694	1.050	26.67	.157	3.988 1.39	2.068
1	25,400	.951	24.155	1.315	33.40	.182	4.623 2.17	3.229
11/4	31.749	1.272	32.309	1.66	42.16	.194	4.927 3.00	4.464
1 1/2	38.099	1.494	37.947	1.900	48.26	.203	5.156 3.63	5.402
2	50.799	1.933	49.098	2.375	60.32	,221	5.613 5.02	7.470
21/2	63.499	2.315	58.801	2.875	73.03	.280	7.112 7.67	11.413
3	76.199	2.892	73.456	3.500	88.89	.304	7.722 10.25	15.252
3½	88.898	3.358	85.293	4.000	101.60	.321	8.153 12.47	18.556
4	101.600	3.818	96,977	4.500	114.30	.341	8.661 14.97	22.276
41/2	114.300	4.280	108.712	5.000	127.00	.360	9.144 18.22	27.113
5	127.000	4.813	122.250	5.563	141.30	.375	9.525 20.54	30.565
6	152.400	5.750	146.050	6.625	168.27	.437	11.099 28.58	42.529
7	177.800	6.625	168.275	7.625	193.67	.500	12.700 37.67	56.056
8	203.200	7.625	193.675	8.625	219.07	.500	12.700 43.00	63.988
0	200.200	1.020	130.010	0.020	213.01	.000	12.100 40.00	00.000
			·					

# Tables.

# Structural Steel Tubing. Styles A and C.

TRUCTURAL Steel Tubing is now employed extensively in the construction of pole brackets, two styles being used, which are known as Styles A and C respectively. This Tubing is made of a high grade of steel and is stronger and stiffer than welded pipe, and also has considerably more elasticity. The Style C Tubing is of the same weight and dimensions as standard welded pipe, while the Style A Tubing is considerably lighter in weight.

Nominal Inside	Actua	l Outside		Thickne	ss of Meta	v1	Weight.			
Diameter.	Dia	ımeter.		Timekne	33 01 ////			inds	Kilogrammes	
Inches.	Inches.	Millimeters.	Inches. Millimeters.				per l	Foot.	per Meter.	
	A & C	A & C	A	С	Α	С	A	С	A	С
11/4	1.66	42.16	.098	.140	2.49	3.550	1.50	2.2	2.231	3.275
11/2	1.90	48.26	.101	.145	2.56	3.685	1.87	2.6	2.782	3.719
2	2.375	60.32	.107	.154	2.72	3.910	2.50	3.6	3.719	5.210

#### Equivalents for Fractions of an Inch.

Table No. 11.

Fraction	Decimal	Equivalent	Fraction	Decimal	Equivalent
of an	Equivalent	in	of an	Equivalent	in
Inch.	of an Inch.	Millimeters.	Inch.	of an Inch.	Millimeters.
32	.03125	.7937	17	.53125	13.4936
1 8 I	.0625	1.5875	9 16	.5625	14.2874
3 3 2	.09375	2.3812	19	.59375	15.0811
1/8	.125	3.1749	5/8	.625	15.8748
5 3 2	.15625	3.9688	31	.65625	16.6686
3	.1875	4.7624	14	.6875	17.4623
7 3 2	.21875	5.5562	23	.71875	18.2561
1/4	.25	6.3499	3/4	.75	19.0498
32	.28125	7.1437	25	.78125	19.8436
5	.3125	7.9374	13 16	.8125	20.6373
11	.34375	8.7312	2 7 3 2	.84375	21.4310
3/8	.375	9.5249	7/8	.875	22.2248
13 32	.40625	10.3186	29	.90625	23.0185
<b>7</b> 1€	.4375	11.1124	15	.9375	23.8123
15 32	.46875	11.9061	31	.96875	24.6060
1/2	.5	12.6998	1	1.0	25.3998

Code Word.	Page.	Code Word.	Page.	Code Word.	Page.	Code Word.	Page.
Abdebam	8	Accingimus	226	Adbellabam .	251	Admulcemus	227
Abdicabam.		Acclamamus	3226	$Adbibam \dots$	252	Adnectam	
$Abdictam \dots$	8	Acclaratus.	226	Adbitendam.	254	Adnectebam.	
$Abducam \dots$	8	Acclinabam.	163	Addensabam	257	Adnectimus.	
Abducebam.	8	Acclinate am.	$\dots$ 172	Addicam	$\dots 257$	Adobruam	289
Aberrabam	8	Acclinamus.	226	Addicebam	258	Adobruamus	227
Abgregabam		Accolebam	153	Addideram .	$\dots 264$	Adobruebam	290
Abhortam	16	Accolueram		Addocueram	260	Adoleam	291
Abituram		Accredebam.		Adducendam		Adolueram	
Abjeceram		Accredimus		Adedimus		Adopertam	
Abjugandam		Accubuimus		Ademtus		Adopertus	
Abjunctam.		Accudimus .		Adeptibus		Adoptatam	
Abjutatam.		Accuramus .		Aderatam		Adoptatus	
Ablactabam.		Accurrimus		Aderrandam		Adoptemus	
Ablatam		Accusandus.		Aderrandus.		Adorabam	
Abliguriam		Accusatus		Aderratus		Adorabamus	
Abnutatus		Acebamus		Adescamus		Adorabimus.	
Abnutivus		Acendus		Adesurimus.		Adoramus	
Abolebamus.		Acentibus		Adesuritam.		Adoraturus.	
Abolemus		Acephalus		Adesus		Adoraveram	
Abolendus		Aceraturus		Adexpetam		Adoriendam	
Aboleremus. Abominamu		Acervandus.		Adhalabam . Adhalamus .		Adoriendus.	
Abortamus .		Acervatus Acetabamus		Adhibendam		Adorsuram .	
Abortibus		Acetamus		Adhinniam .		Adorsurus	
Aborturus		Acetaremus		Adhortatam.		Adortam $Adortus$	
Abrogamus .		Acetaribus.		Adimendam.		Adrademdan	
Abrosam		Acetaveram		Adimplebam		Adradendus.	
Abrumpam		Acetavimus		Adindam		Adrasam	
Absentivam.		Achernanus		Adindebam.		Adrasuram.	
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